State of Utah

Coal Regulatory Program

Coal Hollow
Alton Coal Development, LLC
Technical Analysis
August 26, 2008

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TECHNICAL ANALYSIS DESCRIPTION

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or application for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the minimum regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at http://ogm.utah.gov

The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the application is in compliance with the requirements of that section of the R645-Coal Mining Rules.

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

The applicant has met the requirements to provide ownership and control information for for the operation and surface lands affected in Chapter 1, Section 112. The applicant and operator is Alton Coal Development, LLC, a limited liability company. The company is registered with the Utah Department of Commerce (Confidential Binder, Appendix 1-1). The corporate office is in Cedar City. The telephone and address is provided. The list of company officers' names and addresses and percent ownership, and the employer identification number have been provided. Chris McCourt is the resident agent and manager. The application indicates that the company will be responsible for the abandoned mine fee, but the Rule requires that a person be designated. Please provide a name of the person who will be responsible for paying the abandoned mine fee.

Surface and coal ownership are displayed on Dwg. 1-3 and 1-4, respectively. Section 112.500 provides the names and addresses of the permit area surface owners. The permit area surface is owned by two parties: C. Burton Pugh and the Allecia Swapp Dame Trust, administered by Richard Dame, Trustee. Surface lands have been leased to the applicant. The lease assignments are included in the Confidential binder, Appendix 1-2. Dwg. 1-3 should clearly show the boundary between leased and unleased land owned by Pugh.

Section 112.500 also provides the name and addresses of the owners of the coal to be mined. All coal to be mined is privately held, and has been leased by Alton Coal. The leases are provided in the Confidential binder, Appendix 1-2. There is a small section of coal owned by the Bureau of Land Management (BLM) in the north portion of the permit area shown on Dwg. 1-4, but this coal will not be mined. Therefore the BLM is not listed in Section 112.500 as owner of the coal.

Adjacent surface and subsurface ownership is displayed on Dwg. 1-3 and 1-4. The applicant should define BLM coal ownership in the legend of Dwg. 1-4. Hatch marking has been used to indicate BLM land on the drawing, but this is not indicated in the legend. As stated in Section 112.600, the BLM and Darlynn and Arlene Sorensen own land continguous to the permit area.

Interest in adjacent federal coal is outlined in Section 112.800. The applicant has filed a lease by application with the BLM. At this time, the BLM is writing an Environmental Impact Statement. The BLM has determined the size of the Alton Coal Tract LBA to be approximately 3,600 acres (BLM Open House, Salt Lake City, February 2007).

MSHA numbers for mine structures were not provided in the application. The application states that MSHA applications are pending.

Findings:

The information provided does not meet the requirements of the Regulations for Identification of Interests. Prior to approval, the following information must be provided, in accordance with:

R645-301-112.230, The application indicates that the company will be responsible for the abandoned mine fee, but the Rule requires that a person be designated. Please provide a name of the person who will be responsible for paying the abandoned mine fee. [PB]

R645-301-112.600, Define BLM coal ownership in the legend of Dwg. 1-4. Currently, the legend indicates "no marking" to be BLM owned coal, but "hatch marking" has been used to indicate BLM land on the drawing.• Dwg. 1-3 should clearly show the boundary between leased and unleased land owned by Pugh. [PB]

R645-301-112.700, Provide MSHA numbers for mine associated structures. [PB]

R645-301-112.800, The Pugh lease includes coal and surface located east of the proposed permit area. This adjacent interest should be declared in the application, Section 112. 800. [PB]

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Section 113 of the application states that there are no violations, suspensions, revocations, or forfeitures on record for Alton Coal Resources, LLC., or its officers or affiliates. An Applicant Violator System check indicated that the company has not operated previously in the United States and that two of the officers have been previously engaged in coal mining operations. No violations were retrieved from the system on March 13, 2008.

Findings:

The applicant has met the requirements of the Rules for Violation Information.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The applicant has right of entry to 794.74 acres in T. 39 S., R. 5 W. Salt Lake Meridian, Sections 19, 20, 29, and 30. The application states that right of entry was obtained through lease agreement with the surface owners, Burton Pugh and Alecia Swapp Dame Trust. These agreements are found in the Confidential Binder, Appendix 1-2. Exhibit 1, the Pugh lease, was signed by Burton Pugh on September 10, 2004, but not by Roger Pugh or Margaret Moyers who together own 59.50% of the mineral interest beneath Burton Pugh surface (Section 112.500). Specific lands are described in the Pugh lease document, encompassing 732.78 acres. The Pugh lease includes coal located east of the permit area, but this was not declared in Section 112. 800. The Pugh lease was recorded with the Kane County Recorder on May 17, 2006.

Exhibit 2 of Appendix 1-2 is the the Dame Trust lease, which was signed by the Trustee, Richard Dame, on April 29, 2005. Specific lands are described in the Dame lease document, encompassing 61.96 acres. There is no statement of the date of this lease being recorded.

Findings:

The information provided does not meet the requirements of the Regulations for Right of Entry. Prior to approval, the following information must be provided, in accordance with:

R645-301-114.100, Exhibit 1, the Pugh lease, was signed by Burton Pugh, but not by Roger Pugh or Margaret Moyers who together own 59.50% of the mineral interest beneath Burton Pugh surface (Section 112.500). Please explain why all mineral owners are not signatories to the lease.• Please indicate the date that the Dame lease was recorded with the Kane County recorder. [PB]

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The application provides a legal description for the 635.64 acre permit area in the public notice, Appendix 1-5. The permit area legal description matches the permit area (project area) shown on Dwg. 1-1. The land within the permit area is all privately owned surface. A public road runs through the permit area, County Rd. 136. The mining plan requires relocation of the public road, which is prohibited under UAC Section 40-10-24-(4)(c), unless an opportunity for public hearing is allowed, and a written finding is made, that the interests of the public and the landowners affected will be protected. In accordance with R645-300-123.400, an informal conference was held in Alton, Utah on June 16, 2008 to accept public comment on closure and temporary relocation of the public road. The permit application must also contain the necessary approvals from the authority with jurisdiction over the public road and in this case, over the easement for the relocation of the public road onto federal land.

The permit boundary appears to be more than 300 feet from the Swapp Ranch house on the Richard and Alecia Dame Trust owned property. This assessment is based upon Dwg. 1-1 which is a USGS topographic map that has been enlarged to a scale of 1 inch = 1000 feet. The application must indicate whether the Swapp Ranch is within 300 ft. of the permit area and illustrate the distance on a map of a scale 1 inch = 100 ft. If the Swapp Ranch is within 300 feet of the mine permit boundary, the application must include a written waiver from the Richard and Alecia Dame Trust for mining within 300 feet of the Swapp Ranch. The Dame lease (included in Exhibit 2 of Appendix 1-2 confidential volume) provides right of entry to land adjacent to the Swapp Ranch, but does not clarify that the owner (Dame Trust) had the legal right to deny mining closer than 300 ft. to the dwelling, but waived that right.

Federal lands within T.39 S., R. 5 W., Salt Lake Meridian, were included in the petition for unsuitability in 1980 (Exhibit 2, Appendix 1-3). On December 16, 1980, Cecil Andrus, Secretary of Interior, designated lands to the northeast, east and southeast of the proposed permit area (in Ranges 2, 3, and 4 West) as unsuitable for underground and/or surface methods, in accordance with Section 522(a)(3)(B) of the Surface Mining Control and Reclamation Act (SMCRA). The "unsuitable" designation was made to protect fragile natural systems and to preserve the scenic beauty of at Bryce Canyon National Park and the park visitors' experience (Appendix 1-3, Exhibit 1).

The Secretary specified in items 5 and 6 of the unsuitability determination that any future specific mining plan or permit application for surface mining of the other federal lands in the Alton Coal field should be reviewed for visibility, vibration, and noise issues by the Department of Interior (through the National Park Service and the Office of Surface Mining) to determine whether specific conditions or stipulations should be placed on the permit. The Secretary stressed that the unsuitability designation was not "the only basis for protection of the values for which Bryce Canyon National Park was established," and directed the Department of Interior to take Park values into account in future decisions on undesignated federal lands near the park. These issues are being reviewed by the BLM in the Draft Alton Coal Tract LBA Environmental Impact Statement (EIS).

UAC Section 40-10-24(1)(a) restates SMCRA Section 522(a)(4) and 522(a)(5) which requires that on non-federal lands, the board and the division have an obligation to establish a planning process enabling objective decisions based upon competent and scientifically sound data and information as to which, if any, lands in the State are unsuitable for mining. Such determinations should be integrated with the land use planning processes at the local and state and federal levels. UAC Section 40-10-24(1)(c) describes the unsuitability criteria that must be balanced against the economic impact in a cost-benefit analysis. They include incompatibility with current land use plans; the affect on fragile or historic and cultural lands; the affect on aesthetic values and natural systems; the affect on renewable resource lands, in particular the water supply and aquifer recharge; and areas subject to flooding or unstable geology. To date there have been no petitions for unsuitability and no determinations of unsuitability made for this (fee) coal mining proposal.

UAC Section 40-10-24(4) places prohibitions on mining in National Parks, designated Wild and Scenic Rivers, National Recreation Areas etc. Pertinent to this proposal is UAC, Section 40-10-24(4)(b) which prohibits adverse effects on historic sites unless approved jointly by the division and state or local agency with jurisdiction over the historic site. Many public comments received by the Division were concerned with affects of traffic, noise, dust, vibration on the designated Panguitch Historic District and the affects of truck traffic on safety on SR 89 and the tourist economy in Garfield County and Panguitch.

Lands to be disturbed by coal mining and reclamation are not "unsuitable" as defined by 40-10-24(4) of the Act. Coal mining and reclamation operations would not adversely affect any publicly owned park or any place included in the National Register of Historic Places (R645-103-326). Kane County Commissioner Habbeshaw commented that the Utah Heritage Act supports coal trucking on Hwy 89 (0063.pdf).

Public Lands Policy Coordinating Office (PLPCO) and State Historic Preservation Office (SHPO) were notified of the administrative completeness on March 19, 2008. PLPCO did not provide comment. SHPO provided concurrence (7/14/08) on the Cultural Resource Management Plan (CRMP) and data recovery plan for seven archaeological sites that will be adversely affected. Phase 2 of the CRMP pertains to Panguitch and the pending federal lease action. The CRMP is in Confidential App. 4-1.

There will be an opportunity for public comment on socio-economic issues when the Bureau of Land Management DRAFT Environmental Impact Statement goes out for public review (expected date is August 2008).

Commenters may file an unsuitability claim under R645-103-237, for the proposed permit and the adjacent federal lease by application area. However, under R645-103-431.600, the Division may decide not to process the part of the pertaining to lands to which an administratively complete permit application has already been received. A petitioner must meet

an "injury in fact" test as described by R645-103-421 and provide a description of the impact of the designation (R645-103-422.300 and R645-103-422.800). Petitioners should also keep in mind the criteria for designating land as unsuitable (R645-103-320).

Findings:

A public road runs through the permit area. The mining plan requires relocation of the public road, which is prohibited under UAC Section 40-10-24-(4)(d), unless an opportunity for public hearing allowed. In response to several requests, a public hearing is planned on the relocation of the public road in accordance with R645-103-234.200 and R645-300-123.400.

R645-300-141, The application must identify the legal description of the land designated as permit area. [PB]

R645-103-234.100, The application must include the necessary approvals for road relocation from the authority with the jurisdiction over the public road and from the authority with jurisdiction over the easement for the relocated portion of the public road. [PB]

R645-301-115.300, The application must indicate whether the Swapp Ranch is within 300 ft. of the permit area and illustrate the distance on a map of a scale 1 inch = 100 ft. [PB]

R645-103-235, Should the Swapp Ranch be determined to be within 300 feet of the mine permit boundary, the application must include a written waiver for mining within 300 feet of a dwelling. •The Dame lease included in Exhibit 2 of Appendix 1-2 confidential volume provides right of entry to adjacent land, but does not clarify that the owner has the legal right to deny mining closer than 300 ft. to the dwelling. [PB]

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The permit term of five years will allow for the three year mining plan and reclamation of the last 1000 ft. of highwall within a single permit term. The applicant has not requested a longer term. Section 116 of the application describes the acreage to be mined during each of the three years of mining activity. The disturbance sequence is shown on Dwg. 5-2. A total of 433 acres will be mined.

Findings:

The information provided meets the requirements for a five-year mining permit.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

A draft of the public notice was provided with the application in Appendix 1-5. A revised version of this notice appeared in the Southern Utah News from March 26 through April 16, 2008. A copy of the public notice, as it appeared, was sent to the Division by email on April 2, 2008 and was made part of the public record (2008/Incoming/0009.pdf). The notice indicated that the public comment period would run for 30 days after the last notice. i.e. until May 16, 2008. Within this timeframe, supportive comments were received from the Kane County Commission, Representative Mike Noel, Alton Mayor Claren Heaton, the Utah Mining Association and from 6 regional residents (from Kanab, St. George, Cedar City, and other unspecified locations). Supportive comments focused on the need for jobs and industry in the region and the need to provide for energy independence.

Also within this time frame, negative comments were received from 7 out of state residents (Alaska, Pennsylvania, Ohio, Nevada and unspecified locations); 8 regional residents (Kanab, St. George, Santa Clara, and other unspecified locations) and one housing subdivision corporation east of Bryce Canyon National Park and the organization Save Our Air & Resources (Richfield Utah); one Hatch resident; and 16 Panguitch business and homeowners whose main concerns were the affects to the tourist industry by the transportation of coal (300 trucks daily) in the SR 89 corridor (recently designated the "Mormon Pioneer Heritage Highway") and through the Panguitch National Historic District; the affects of coal truck traffic on safety; the affect of particulates on visibility and the affect of lighting on the night sky; the displacement of wildlife; the affects to water resources from selenium and mercury; and the affects of a haul route through Alton. Three of these petitioners requested an informal conference based upon these issues.

The Division's agency notification letter (2008/Outgoing/0002.pdf) indicated the comment period would end on May 22, 2008 (not realizing how quickly the public notice would be published). Consequently, several more comments were received by May 22, including comments from the Southern Utah Wilderness Alliance, 13 southwestern region residents (Kanab, Cedar City, and unspecified), 4 Panguitch residents, 2 Hatch residents, and 2 Alton residents, all of whom were not in favor of the proposal. Three of these commenters requested an informal conference. In addition, the SUWA requested "Consulting Party Status" for cultural resource management.

Also received by May 22 was a supportive comment from one individual from the Southwestern region of Utah whose location was unidentified. In all 43 comments were received on or before May 22, 2008.

The Division has provided public notice in the Garfield County News and the Southern Utah News two weeks prior to the informal conference. In addition, each commenter was notified individually of the conference.

The Division has received comments with regard to this specific Coal Hollow application, for development of fee coal, from the following agencies:

- Powell Ranger District of the Dixie National Forest (2008/Incoming/0048.pdf)

The USFS Service expressed the same concerns as the community: that the area is of importance for tourism, that the traffic on SR 89 is made up of large recreational vehicles traveling to Bryce Canyon N.P., Zion N. P., and the Grand Canyon N.P; that the Class I air shed should not be degraded, since the night sky quality was part of the visitor experience and tourism makes up 60% of the economy.

- Office of Surface Mining (2006/Incoming/0008.pdf) stated that no federal mine plan approval was required.
- State Historic Preservation Office (2007/Incoming/0022.pdf)

The Division has been coordinating the UAC 9-9-404 review of this project with SHPO and has contracted with PLPCO for an archaeological review of the PAP.

The Governor's Resource Development Coordinating Council also had a public/agency comment period. The RDCC did not provide any comments to the Division.

Findings:

The information provided by the Applicant has met the requirements for public notification. The Division continues to fulfill its requirement to include the public in the permitting process. Prior to approval, the application must include the following, in accordance with:

R645-300-121.100 An affidavit of publication needs to be included in the Application. [JS]

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

The $5.00 fee was paid with the application.

Findings:

The Applicant has met the requirements of the filing fee.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

Appendix 1-6 contains a statement of the mine permit application's veracity and accuracy from Chris McCourt, the manager and resident agent for Alton Coal Development, LLC. The information provided is in a format prescribed by the Division.

Findings:

The information provided is in a format prescribed by the Division and meets the requirements of R645-301-121.300. Elsewhere in this technical analysis, the Division makes requests for further information or requests clarification.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

In most cases analytical data is accompanied by the names of the individuals or firms responsible for collection and/or analysis of the data. One exception is the Laboratory Analytical Report provided in Appendix C of App. 2-1 for report dated 04/24/07 under work order C07040226.

Findings:

R645-301-131, Please provide the name and contact information for the laboratory providing soils report dated 042407 under work order C070402276. [PB]

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

On the copy of the BLM land-ownership map (dated November 30, 2006 and located at the end of Chapter 1, Appendix 1-3, Exhibit 3), the color-coded explanation does not indicate which colors represent National Forest, Private, and National Park lands.

Findings

R645-301-121.200 The Applicant must include on the land-ownership map (dated November 30, 2006 and located at the end of Chapter 1, Appendix 1-3, Exhibit 3) the color-key for National Forest, Private, and National Park lands. [PB]

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The first application was received on June 27, 2006 and was determined incomplete on August 22, 2006. The second application was received on June 14, 2007 and was determined incomplete on August 27, 2007. Supplemental information to the June 14, 2007 application was received on January 24, 2008. The Applicant was notified that the application package (combined information received June 14, 2007 and on January 24, 2008) was considered complete on March 14, 2008 (2008/Outgoing/ 0001.pdf and 0001a.pdf).

Findings:

The Applicant has met the completeness requirements.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

Approximately 7,000 ft. elevation, gently sloping land vegetated with Utah juniper, pinyon pine, big sagebrush and wet meadows. Lower Robinson Creek (runs east west on the north of permit area). Sink Valley Wash (runs north south on the east of the permit area). There area several springs and agricultural ponds on eastern boundary of the proposed permit area. The average annual precipitation is 16.43 inches, evenly distributed throughout the year. The current and post mining land use is undeveloped rangeland (wildlife) and livestock pasture (grazing).

A description of the hydrologic environment of the Coal Hollow Mine site and surrounding area is provided in Section 721. Baseline information is presented in Section 724. The climatic conditions (App. 7-6), geology and hydrologic conditions (App. 7-1), groundwater and surface water resources, monitoring and evaluation (App. 7-4) document site conditions.

Findings:

The information provided meets the requirements of the Rules for general resource information.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The Applicant did not meet the minimum requirements of this section. In Section 116.100 and Plates 1-3 and 1-4 of the PAP, the Applicant did list the number of acres that will be associated with each phase of mining and did state that mining is on fee land only. However, the Applicant must state in the PAP the legal description of the permit area and include the number of federal, state and fee acres within the permit area.

The Applicant must correctly identify the permit area on the maps. The Applicant used the term "project area." That term is confusing because it is not defined in the R645 rules while the term "permit area" is defined in Section R645-100 of the Utah Coal Rules.

The Applicant must include in the permit area the portions of Kane County Road 136 that are under control of the Applicant within the permit area. The Division considers the area to be under control of the Applicant if they can limit access to that section of road.

Findings:

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-521, The Applicant must change the term *project area* to *permit boundary* on each map in submittal. The term project area is not defined in Section R645.100 of the Utah Coal Rules while the term permit boundary is. •The Applicant must also include all areas under control of the Applicant such as access routes to Kane County Road 136, and any portion of roads that the Applicant has exclusive control over (access route around Alton). [WW, PB]

R645-301-521.190, The Applicant must state in the PAP the legal description of the permit area and include the number of federal, state and fee acres. The Division suggests the information be in table format and be located in Chapter 1 of the PAP. Even if there are no federal or State acreages, the table is requested. [WW]

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

The application for the Coal Hollow Mine includes the following cultural resource information (located in confidential files):

- 6/14/07 Cultural Resource Inventory
- 6/14/07 Paleontological Survey
- 6/14/07 Geologic Report of the impacts of Bedrock and Surgical Units on the Distribution of Cultural Resources at the Alton Coal Field
- 6/14/07 Data Recovery Plan for identified Cultural Resources
- 6/25/07 Revised Data Recovery Plan

- 1/9/08 Draft Outline of Cultural Resource Management Plan, CRMP
- 02/28/08 2nd Revision to Data Recovery Plan
- 02/28/08 Excavation Permit Application
- 03/14/08 CRMP
- 05/23/08 Revised CRMP
- research design for site 42Ka2044

On November 2, 2007 the Division sent a letter to Dr. Matthew Seddon, State Historic Preservation Officer, requesting concurrence with the Division's determination and eligibility effect determination for the proposed Coal Hollow Mine. Dr. Seddon concurred with the Division's determination by way of correspondence dated November 20, 2007. However, because of adverse impacts and cumulative effects associated with the lease application on federal land, a Cultural Resource Management Plan, (CRMP) was developed in addition to a Data Recovery plan. PLPCO approved of the data recovery for all sites including site 42Ka2044 and with the CRMP on July 11, 2008 (Incoming document 0134). SHPO concurred with the CRMP and data recovery plans on July 14, 2008 (Incoming document 0135).

Findings:

The information is adequate to meet the requirements of this section of the regulations.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The application discusses the climatological factors representative of the proposed permit area in Section 724.400 and Appendix 7-1. Table 7-3 summarizes climatological information from the Alton weather station located approximately 2 miles north of the proposed mine: data were collected from 1928 to 2005. Drawing 7-8A presents the data graphically. The Applicant installed an automated weather station at the proposed mine site in December 2005. The station continuously measures and records temperature, wind velocity and direction, and precipitation, although the rain gauge is not operative in the winter. Drawing 7-8B plots daily maximum and minimum temperatures at the Coal Hollow Mine site for from January 2006 to May 2007. Appendix 7-6 contains climatological data for both the Alton and Coal Hollow weather stations. Speed and direction of prevailing winds at the proposed mine site are shown on rose diagrams in Figure 4 of Appendix 7-1.

The site has an average annual precipitation of 16.38 inches per year (Section 724.411). Wind data since 2005 are plotted in wind rose diagrams showing the average velocity (6 mph)

and predominate direction (from the northeast) (Fig. 4, App. 7-1). Temperatures have be measured and summarized in Table 7-3.

Findings:

Climatological Resource Information in the application is adequate to meet the requirements of the Coal Mining Rules.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

Plant communities within the proposed permit area and reference areas are described in Vol. 2, Chap. 3. The descriptions include acreage, percent of total by community, total living cover, percent cover by shrubs, grasses, forbs and woody plant species, for;

- The proposed Disturbed Sagebrush/Grass Community
- The Sagebrush/Grass Reference Area
- The Proposed Disturbed Meadow (Dry) Community
- The Meadow (Dry) Reference Area
- The Proposed Disturbed Pinyon-Juniper Community
- The Pinyon-Juniper Reference Area
- The Proposed Disturbed Pasture Land Community
- The Pasture Land Reference Area
- The Proposed Disturbed Oak brush Community
- The Oak Brush Reference Area
- The Proposed Disturbed Meadow Community
- The Meadow Reference Area
- Other Meadow Communities

Tables 3-1 through 3-33 include living cover and frequency by plant species, total cover and composition and woody species density. Table 3-34 includes pounds per acre "biomass production" for each plant community.

Appendices 3-2 and 3-4 include the methodologies, maps, sampling design and transect/quadrat placement, cover and composition, woody species density, sample size and adequacy, statistical analyses, photographs and threatened and endangered plant species, results, summary and discussion and color photographs for the referenced communities.

Vegetation information pertaining to the county road realignment should be included in the application as adjacent area.

Findings:

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-321.200, Vegetation information pertaining to the county road realignment should be included in the application as adjacent area. [JH]

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

Fish and Wildlife information for the permit and adjacent areas is included in Vol. 2, Chap. 3, Sec. 322. Agency consultation and studies conducted are listed on page 3-32 and 3-33. Site specific resource information as required by section R645-301-322.200 of the regulations is included in the confidential portion of the application.

Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. A brief narrative for each species describing surveys conducted to verify their presence (or the rationale for their absence) needs to be included in the application. i.e. MSO protocol and survey results.

High Value habitats for black bear, rocky mountain elk, mule deer, and sage grouse are described on page 3-35 of the application. The information is derived from the DWR GIS database indicating that these four species occur within or adjacent to the proposed disturbed area. Additional information for the sage grouse is included in Appendices 3-1 and 3-3.

Maps and Aerial Photographs

Vegetation communities, reference areas are delineated on drawing 3-1. Drawings 3-2 through 3-5 include the habitat for the high value wildlife species, black bear, rocky mountain elk, mule deer, and sage grouse.

Findings:

The information is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with:

R645-301-322, Threatened, Endangered, and Candidate plant and animal species for Kane County are included in Table 3-35. For each species listed in Table 3-35, provide a brief narrative describing surveys and the rationale for each species absence from the permit area. i.e. MSO protocol and survey results. [JH]

R645-301-322, Fish and wildlife information pertaining to the county road realignment should be included in the application as adjacent area. [JH]

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

The application includes a non-prime farmland determination by the NRCS in Appendix 2-1, Section 1). The Order II soil survey in Appendix 2-1 includes field description of soil pits, laboratory analysis of samples taken by horizon, and a soil map (Dwg 2-1). The soil survey classifies the soil into thirteen family map units. These map units are described in the text (Section 222.200) and representative pedons are provided for each unit. Sections Two and Three of Appendix 2-1 provide greater detail on the classification and naming of the soils and the typifying pedons for the soils. Productivity estimates are provided in Section 321.200. Topsoil and subsoil will be salvaged for use in reclamation, no substitute or borrow soils will be needed.

Findings:

The information provided does not meet the requirements for baseline soil survey information as required by the R645 Coal Rules. Prior to approval provide the following in accordance with:

R645-301-121.200, Table of Contents for Chapter 3 is not completed for Appendices and Drawings• There should be a cover page for the soils analysis located in Appendix 2-1 to indicate that they are Appendix C of Appendix 2-1. • The Energy Laboratories, Inc reports found in Appendix 2-1 for CH-01, CH—03, CH-06 do not include water extractable Selenium which was analyzed and reported for these same samples in Appendix 6-2. Please provide the Energy Laboratories, Inc. water soluble selenium analysis in Appendix 2-1 or reference the location of the information in Appendix 6-2. • Energy Laboratories sample ID "B07110148-009" for Client Sample ID "Box 13 CH 5 Below Coal" does not match the client

ID listed in the sample identification table for "Box 13 CH 5 Below Coal." A similar circumstance occurs with Energy Labs sample ID "B07110148-010" for Client Sample ID "CH-03, Above Underburden". [PB]

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

Chapter 4, Section 410 describes the current land uses for the Coal Hollow project. They include zoning for agricultural use, grazing for livestock production, recreation, hunting and wildlife habitat. Drawing 1.3 describes the land status (private) of the proposed permit area. Land capability information is included on page 4-4 of Chapter 4. Chapter 3 describes land capability in terms of percent cover for the vegetative communities in the permit and adjacent areas. The application also includes a description of the land capability in terms of supporting livestock, 1.125 AUM's, (animal unit month) for the Pugh and Dames properties. A description of the existing and proposed post-mining land use is included in the following paragraphs:

The Management Plan for the Richard Dame Property

The current land use of Mr. Dame's property is forage for domestic livestock and some wildlife species. The land includes irrigated pasture for cattle and some horses, native stands of pinyon juniper and sage brush communities as noted on map 3-1, Vegetation. Mr. Dame's property will be returnd to pasture land for domestic livestock with some plant species for wildlife habitat. Table 3-19 includes the seed mix, native and introduced grasses and forbs, to be planted to meet the landowner's request. A copy of the signed management plan is included in appendices 4-3 and 4-4.

The Management Plan for the Burton Pugh Property

The land owned by Mr. Pugh currently provides forage for livestock and some wildlife species as well. The land includes sub-irrigated pasture land, meadows, sagebrush/grass, pinyon juniper and oak brush communities as noted on map 3-1. The livestock on the property are mostly cattle and sometimes horses. Mr. Pugh's land will be restored to its original use for livestock grazing and wildlife habitat. The seed mix will include plant species used by wildlife species in addition to native and introduced grasses. A portion of the property will be reclaimed to sage –grouse habitat as well. A copy of the signed management plan is included in appendices 4-3 and 4-4.

Findings:

The information is adequate to meet the requirements of this section of the regulations.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The applicant has made a request for determination of alluvial valley floor for the proposed Coal Hollow Mine and Sink Valley Wash area.

Background Information

The Alton/Sink Valley area was the subject of a much larger, mine permit application in 1982 and 1987 by Utah International Inc. (UII, P/025/003). The UII application included the Sink Valley area in T 39 S, R. 5 W. and surrounding federal leases in T. 39 S., R. 6 W.; T. 40 S., R. 4 W.; T. 40 S., R. 4 ½ W; T. 40 S., R. 5 W; and T. 40 S., R. 6 W. The federal leasing required an Environmental Impact Statement (Development of Coal Resources in Southern Utah, 1979). The Office of Surface Mining (OSM) commissioned a reconnaissance report of the alluvial valley characteristics of the Alton Area in 1980. The resulting report, by Jack Schmidt was titled, "Reconnaissance Determination of Alluvial Valley Floor Status and Assessment of Selected Geomorphic Parameters in selected Stream Valleys of the Alton Petition Area and Adjoining Lands, Garfield and Kane Counties, Utah." The Schmidt report details agricultural production, water rights and water diversions in the Alton amphitheater and Johnson Canyon at the time. The report describes a very active agricultural community in Sink Valley and adjacent areas. (Jack Schmidt's full 1980 report can be found at 025/0005/2006/Incoming/0012.pdf.)

In 1983, OSM mapped the Sink Valley alluvial valley floor (AVF) and stressed the importance of agricultural land use in making the Sink Valley AVF determination, in the absence of more typical geology associated with an alluvial valley (OSM 1983 [draft] Alluvial Valley Floor Identification and Study Guidelines, Appendix D, pg. D-2 and D-6). OSM stated that the initial reconnaissance conducted of the Alton area by Jack Schmidt in 1980 was sufficient to confirm the existence of an alluvial valley floor based upon the importance of the valley land to agriculture (pg. D-4), but suggested that an Applicant for a mine permit might collect additional data to clarify the regional hydrologic pattern (page D-2).

OSM was required to make specific detailed findings with regard to the protection of the hydrologic balance and reclamation during the processing of the Alton mine permit application (which included tracts of federal leases) in response to petition and litigation in United States District Court for the District of Utah, Central Division (0250003/1987/Incoming/0040.pdf). The Court's Memorandum of Decision and Order was dated February 12, 1985.

The February 8, 1988 Initial Completeness Review for the 1987 UII Alton Mine application indicates on page 34 that the following areas were identified as probable alluvial valley floors (filed as 0025/0003/1988/Incoming/0023.pdf):

1. Upper Skutumpah Creek, Sec. 20 and 29, T40 S., R 4 1/2 W.
2. Skutumpah Creek, Sec. 30, T. 40 S., R. 4 ½ W.
3. Thompson Creek and Tributaries, Sec. 30 and 19, T. 40 S, R 4 ½ W and Sec. 24, 13, 12, T 40 S., R. 5 W.
4. Bald Knoll Hollow, Sec. 14, 15 and 16, T. 40 S. R. 5 W.

The Division further stated in the Initial Completeness Review on pages 35 that the following areas had been "positively" determined to be Alluvial Valley Floors:

1. Skutumpah Creek in Sec. 32, T.40.S., R.4 ½ W. and Sec. 5 and 6 in T.41 S., R. 4 ½ W.
2. Thompson Creek in Sec. 31, T.40 S., R.41/2 W. and Section 6 in T.41 S., R.4 1/2 W.
3. Upper Sink Valley Wash in Sec. 32, T. 39 S., R. 5 W. and Sections 5 and 8 in T. 40 S. R. 5 W.
4. Sink Valley in Sections 19, 20, 29, and 30, T. 39 S., R. 5 W.
5. Lower Swapp Hollow in Sec. 28, T. 39 S., R. 5 W.
6. Kanab Creek in Section 18, 24, 25, 26, and 36, T. 39 S., R. 5 W.
7. Alton Amphitheater in Sec. 6 and 7, T.39S., R.5W. and Sec. 1, 11, 12, and 13 in T.39S. R.6W.

The Coal Hollow proposed permit area encompasses the Sink Valley in Section 19, 20, 29 and 30 in T. 39 S., R. 5 W. The Division's 1988 decision was based upon borehole data showing sorted deposits of sand size or larger particles and previously published information, as laid out in a memo from Richard Smith, Geologist, to John Whitehead, Permit Supervisor, dated November 9, 1987 (025/0003/1987/Internal/0002.pdf).

The UII commissioned Water Engineering Technology, Inc. (WET) of Fort Collins, CO to evaluate the Sink Valley area. The1988 WET report, titled "Geomorphological and Sedimentological Characteristics of Sink Valley, Kane County, Utah" argued that the sediment in Sink Valley is comprised of coarse material in an alluvial fan laid down by unconfined sheet floods, debris flows and mud flows. The report claims there was never a continuous stream in Sink Valley. Thus, by R645-100 definition, a lack of a continuous stream channel meant an alluvial valley floor in Sink Valley could not exist.

The Division was not persuaded by the WET report. To the contrary, Richard Smith, Division Geologist, viewed the WET report as further evidence of unconsolidated stream-laid deposits holding streams and reported as much to the Division Associate Director, Ken May, on

October 13, 1988. His memo cited near surface deposits of sand sized particles, selectively sorted, and deposited within and adjacent to stream channels, as well as the presence of smooth land surfaces and channels exceeding 3.0 ft. wide X 0.5 ft. deep within Sink Valley, and the established agricultural land use, for a positive determination of an alluvial valley floor in Sink Valley (0250003/1988/Internal/0001.pdf).

Current Coal Hollow Mine Application

This 2008 Coal Hollow Mine application includes the WET 1988 investigation in Appendix 7-4; current reconnaissance by Peterson Hydrologic Inc. in Appendices 7-1; and. Alluvial Valley Floor Supplemental Information in Appendix 7-7 that specifically addressed land use, soils, vegetation and hydrologic questions raised by the Division during the 2007 Administrative Completeness review.

In the discussion below, the Division evaluates the application for information pertinent to R645-302-321, in order to make a determination of the extent of any alluvial valley floor within the proposed permit area, and adjacent area, per R645-302-321.300. The applicable R645 Rules are used to organize the discussion.

R645-302-321.210 Mapping of Unconsolidated Streamlaid Deposits Holding Streams

Appendices 7-1 and 7-4 refer to the definition of "alluvial valley floor" in the R645-100 Rules which exclude from an alluvial valley floor all "upland areas...composed chiefly of debris from sheet erosion, deposits formed by unconcentrated runoff ...or other mass movement accumulations..." The term, "upland areas" is also defined in R645-100 and means, "those geomorphic features located outside the floodplain and terrace complex, such as isolated higher terraces, alluvial fans...."

The applicant states that no flood plains or stream laid deposits were identified in the project area, consequently a map of the flood plain and terraces was not created for Robinson Creek and Sink Valley Wash (App. 7-7, pp. 4-5). The Applicant found no evidence of flood plain and terrace features that are characteristic of alluvial valley floors (App. 7-7, pp. 4-5) and suggests that coalesced alluvial fans form the surface of Sink Hollow Wash (App. 7-7, pp. 2-3). The cross section across the fan is convex, not planar. The Division notes that Appendix D of the 1983 OSM AVF Guidelines acknowledges the topography does not fit the typical flood plain and terrace system, but that the topography is suitable for irrigation.

Aerial photos such as Plate 1 in App. 7-7 indicate numerous discontinuous channels, but no continuous channel in Sink Valley Wash. The Applicant suggests the lack of continuous channel is indicative of an alluvial fan, but not of stream laid deposits. The applicant states that the lack of a continuous channel may be partly due to human activity (construction of diversions, ponds), and may also be due to deposition by mud flows, sheet floods, and debris flow. The

Division notes the discontinuous channels shown on Plate 1 seem to coincide with the historically developed pastureland shown on Dwg 3-1.
[The permit boundary should be shown on Plate 1 for ease of comparison with other (larger scale) plates.]

Neither the federal or R645 Rules use the term "continuous channel" to define alluvial valley floor. Although the Applicant's field investigation indicates the main Sink Valley Wash channel is not continuous, Figure 19 shows a stream channel in Sink Valley. In addition, the water rights map, Drawing 7-3, indicates continuous point-to–point diversions along the length of the Sink Valley Wash channel and the USGS Alton Topographic Quad shows a continuous channel for Sink Valley Wash. Alluvial ground water is present in confined piezometers at a depths of two to twenty feet within the proposed permit area (Table 1, App. 7-7). Unconfined water is evidenced by the numerous springs shown on Dwg. 7-1.

The direction of shallow groundwater flow is shown in Figure 21 of App. 7-1. Dwg. 7-13 shows local saturation levels in the alluvium of Sink Valley, but does not represent a potentiometric surface. The Applicant concluded that the distance between the monitoring wells and the perched, discontinuous nature of the saturated zones did not allow extrapolation of the potentiometric data for the entire permit area (App. 7-7, Sec. 2.6). The Applicant also concluded that an isopach map of the depth to saturation, based on the soils pits and shallow exploration bore holes, was not possible, because a continuous saturated ground-water system was not found (App. 7-7, pp. 7- 8). The Division notes that Table 2, App. 7-7 indicates depth to ground water in soil pits was between one and six feet on the eastern side of the permit area and between four and ten feet in the center of the permit area.

Figure 8, App. 7-1 illustrates the geology in cross-section. Figure 8, App. 7-7 shows the streams, pond,s springs, and well locations in relation to surface geology, as well as the projected location of the pits and permit boundary. The Applicant states that Kanab Creek and its tributaries are downcutting. Robinson Creek, the only continuous channel in the Sink Valley Wash area, is deeply incised and appears to be actively downcutting. The Division notes that Appendix D of the 1983 OSM AVF Guidelines acknowledges the entrenched stream courses (pg D-4) and states that the central question becomes, what valleys have the capability to be irrigated?" (pg D-8). The OSM AVF assessment assumes water can be "transported to any terrace level, providing that a part of that level had historically been irrigated." (pg. D-8). The more important issue is water availability (pg D-9).

Adjacent areas along Kanab Creek and lower Sink valley are not mapped, but are required to be mapped and evaluated by R645-302-321.100, and also are required to be mapped, because they may currently be or may have historically been irrigated.

R645-302-321.220 Mapping of Agricultural Lands

App 7-7, Sec. 4.1 through 4.3 provides a description of the agricultural use of lands within and adjacent to the permit area by cattle and for crop production. The locations of existing undeveloped rangeland, subirrigated lands, crop lands and pastures are shown on Drawing 3-1 and Drawing 7-7. There are 69 acres of meadow, 192 acres of pasture, 215 acres of sagebrush/grass land and 40 acres of oak brush, and 114 acres of pinyon /juniper in the permit area (un-numbered Table, Sec. 321.100, Chap. 3, pg. 3-3). Dry meadow acreage is described in Section 311.100, but the acreage was not calculated. The Division estimates the dry meadow acreage to be twenty acres. Meadow, pasture and oak brush are by far the most productive lands with production estimated (not measured) at between 1,100 to 2,000 lbs/acre (Table 3-34 ,Sec. 321.100, Chap. 3).

Grazing lands supported by numerous seeps and springs dominate the proposed permit area as shown in Chap 4, Ex. 4.1. Crop land is illustrated on Ex. 4.1 east of the proposed permit area. Acreage under production was not provided, and Ex. 4.1 has no scale, so that acreage can not be calculated. Drawing 7-1 shows the total number of seeps and springs in the permit area available for grazing animals. Drawing 7-7 shows the ponds and ditches developed to support agriculture. Both Pugh and Dame own lands designated pastureland or subirrigated meadow lands within the permit area that have been leased to Alton Coal Development (Dwg. 3-1 and 7-7). How long the lands have been out of production was not stated.

The Pugh lands were formerly quite productive: 700 bushels/acre of potatoes were raised with irrigation on the Pugh property in 1917 and in the 1950's oats and wheat crops were produced (personal communication with C. Burton Pugh, September 6, 2006).

Acreage of crop production shown on Ex. 4.1 in the adjacent area should be provided as well as mapped, along with acreage figures and mapping of the adjacent areas under production along Kanab Creek and lower Sink valley.

R645-302-321.230 Mapping of Current or Historic Flood Irrigated Lands

7-7 identifies flood irrigated and subirrigated lands, ditches that have been used for irrigation, and ponds that were probably part of irrigation systems. Based on conversations with a local resident, the Applicant concludes in Section 728.334, that there has been no irrigation during the past 10 years. The reason given for the decline in agricultural activity is the lack of appreciable quantities of water (App 7-7, pg. 13). Water monitoring conducted between 2005 and 2007 shows no appreciable difference from the 1987-88 data.

Appendix 7-7 describes the general construction and use of the water holding ponds. There are few conveyance systems between ponds; all conveyance systems in the area are indicated on Drawing 7-7. The conveyance systems consist of earthen ditches.

Stockwatering is the use stated on most of the water right printouts in Appendix 7-3, but most spring and surface-diversion rights in the W/2 of Sec. 29, E/2 of Sec 30, and W/2 of Sec. 32, T. 39 S., R. 5 W., along Sink Valley Wash around and downstream of the Swapp Ranch, either cover both stockwatering and irrigation or are for irrigation only. Ponds are used for stockwatering and irrigation systems (App. 7-7, pg. 14).

Meadowlands shown on Dwg 3-1 are dominated by sedges, rushes and wild iris are subirrigated and the depth to alluvial groundwater is within "inches to a few feet below the ground surface" (App. 7-7, pg. 10). Depths to ground water in the pasturelands varies seasonally from within one or two feet to several feet below the surface (App. 7-7, pg. 12 and Table 1).

The Pugh lands were formerly irrigated using ditches, ponds, and pipes to bring water from as far as upper Robinson Creek (discussion with C. Burton Pugh in September 2005). Today, pasture lands in the permit area, dominated by introduced grass species, rely on precipitation and stored soil moisture for growth (average approximately 16 in/yr) and not on irrigation or subirrigation (App. 7-7, pg. 12). The Division notes that Dame's pasturelands may be subirrigated by the active water rights on Pond 29-3 and 29-5 (Dwg. 7-7).

Darlynn Sorensen currently uses flood irrigation for hay or grain production on his property at the south end of Sink Hollow Wash (Dwg. 7-7). Irrigation typically was a single flood application in the spring, when adequate water was available (App. 7-7, pg. 13). Acreage of the Sorenson flood irrigated lands was not provided.

The Applicant has shown that the agricultural use of the land within the permit area has declined and that Pugh's subirrigated meadows on the eastern side of the permit area are now supporting undeveloped grazing. Acreage of irrigated lands is not provided. Adjacent flood irrigated or subirrigated areas along Kanab Creek and lower Sink valley were not mapped. Adjacent area lands are required to be mapped to show historic and current flood irrigated lands.

R645-302-321.240 Documentation of SubIrrigation

The locations of subirrigated lands are shown in Drawing 7-7 and described in App. 7-7, Sec 4.1. Drawing 3-1 shows meadow communities that are sub-irrigated. App. 7-7, Sec. 5.4.2 describes the meadow communities. These communities are all on the east side of the proposed permit area and they are all fed by springs. There are 260 acres of meadowland and pastureland within the proposed 653-acre permit area (table on pg.3.3, Chap. 3 and Dwg. 3-1).

Soils in Map Unit 7 are wet. These soils are mapped on Dwg. 2-1 and their location correlates with the subirrigated lands shown on Dwg. 7-7. Map Units 6 and 13 have localized areas of subirrigation, including the approximately 20 acres of dry meadows shown in Plate 3-1 on the west side of County Road 136. The Applicant states that the representation of subirrigated lands on Dwg. 7-7 does not include these dry meadows that may also be subirrigated

(pp. 10 and 12, App. 7-7). Depth to ground water within these meadows and pastures is provided in App. 7-7, Section 3.4, p. 10. The Applicant points out in App. 7-7, Sec. 2.6 that potentiometric data from piezometers (Table 1) does not represent shallow ground water conditions which are logged in Table 2 for the many soil pit locations shown on Figure 5 of App. 7-7. Together, Table 2 and figure 5 report that depth to water is between 50 and 120 inches in Sections 19 and 20 (T39 S, R5 W) and between 14 and 30 inches below the surface in Section 29 at the mouth of Swapp Hollow and between 60 and 80 inches in the E ½ S 1/4 of Section 30 on the southern most portion of the permit area. Depth to groundwater becomes very shallow again as one approaches Johnson Spring (shown on Dwg 7-2).

Soil mottling confirms subirrigation in plant communities (App. 7-7, Figure 10). The meadow and dry meadow plant communities grow where soils are sub-irrigated. App. 7-7 Section 5.4.4 refers to table 7 that identifies the characteristics of the meadow and dry meadow plant communities. App. 7-7 Section 6.4 states that "the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques," and pasture land in the proposed permit area has the potential for subirrigation. In fact, Figure 10, App. 7-7 indicates that fine roots in all plant communities extend between 50 and 80 inches below the surface (with the exception of the very shallow pinyon/juniper community). The deepest rooted community is the Oak Brush at 80 inches. The shallowest rooted is the meadow community at 50 inches. The shallow rooting depth likely correlates to the availability of water.

The information provided indicates a substantial area of subirrigated meadow and potentially irrigated pastureland within the proposed permit area. Adjacent areas along Kanab Creek and lower Sink valley are required to be mapped.

R645-301-321-250 Documentation Of Water Quality and Yield, Stream Flow, Soil Characteristics, and Topography Affecting Flood Irrigation Potential

App. 7-7 Figure 8 shows all of the springs emanate from the alluvium (Qa). Seven springs are outside the permit area and three (SP 14, SP22, SP23) are inside the permit area. SP22 and SP 23 are on the edge of the mine pit boundary. . Table 3 and Figure 9 provide the water quality of two selected springs, SP6 and SP8 that represent the south and north subirrigated lands shown on Dwg 7-7. App 7-7 Section 5.2 compares water quality with the OSM guidelines for irrigation water suitability (Figure B-5 in OSM, 1983 Alluvial Valley Floor Identification and Study Guidelines). The spring water that is subirrigating lands in the permit area is Class 2 (medium salinity hazard, but not sodic) in the northern permit area, but degrades to Class 3 (high salinity hazard, not sodic) in the southern permit area. Adequate drainage and salt tolerant plants, such as alfalfa and some grasses would be recommended. The Division notes that water quality in the southern permit area has improved considerably between 1987-88 sampling and 2005 sampling, perhaps due to less grazing pressure or less agricultural activity?

Table 9 in App. 7-7 provides discharge and water quality data for selected surface water monitoring locations that are shown on Dwg. 7-2: Section 21 Canyon drainage (SW 7); Upper reach of Swapp Hollow (SW 8); Left Fork of Sink Valley (SW 6); (left) Dry Fork of Robinson Creek (SW 4); Lower Robinson Creek near the confluence with Kanab Creek (SW 5); Robinson Creek at the location where it is to be re-routed within the proposed permit area (SW 101); Water Canyon (RID-1) aka the right fork of Robinson Creek and source of diversion water. Drawing 7-7 of irrigation structures should be drawn on the same scale as Dwg. 7-2, so that the point of diversion on Robinson Creek could be known in relation to the monitoring point SW 4; and so that the monitoring point for Water Canyon (RID-1) can be seen in relation to the Water Canyon diversion to the Pugh pasture. These relationships must be shown to confirm that monitoring accurately portrays the water supply. The Division notes that Sink Valley is monitored at SW 6, in a location that does not receive flow from the eastern canyons.

Swapp Hollow water is medium salinity, with low sodium hazard, suitable for most plants. Swapp Hollow Creek has the best potential to support flood irrigation. The Applicant states that the average instantaneous discharge measured is 55 gpm. Calculated annual yield is 88.7 acre-feet, which would irrigate approximately 24 acres of alfalfa or 33 acres of pastureland using an earthern ditch distribution system (App. 7-7, Sec. 6.1.1 and Table 9).

Lower Robinson Creek, Dry Canyon, Section 21 drainage, Upper Water Canyon spring diversion, Sink Valley Wash, and alluvial ground water discharges have less potential to support flood irrigation. The Applicant states the flow volumes are low and inconsistent. Water Canyon spring has good quality water. Water quality of the other potential sources is not discussed, mainly because analyses are sparse due to no-flow conditions.

Pond 29-3 on Richard Dame's property is fed by groundwater from an alluvial spring. Surface water collects downstream in pond 29-5, also on the Dame property (pg. 14, Sec. 4.2, App. 7-7).

The Sorenson's flood irrigated croplands are outlined on Dwg 7-7. The Sorenson property is just east of the permit area (Dwg 1-3). App. 7-7 Sec. 4.1 relates that ponds 29-1 and 29-2, as well as the ponds 29-6, 29-4, 29-7, 29-8, 29-9 [that function as a series of overflow ponds down the Sink Valley drainage] and pond 32-1 are all on Sorenson property. Of the Sorenson's ponds, only pond 29-7 is equipped with an outlet control structure for irrigation.

A portion of the Pugh property is subirrigated, the rest was flood irrigated with a diversion Water Canyon (Dwg 7-7). Pond 20-1 is located on the Pugh property and it is equipped with an outlet control structure for irrigation (Sec. 4-2, App. 7-7).

Water quality data indicate that there may be enough water to flood irrigate; that the quality of water is sufficient to raise alfalfa or other grasses for hay crops and pasture. The

volume of water to be encountered during mining and the handling of that water, as well as the effect of encountering alluvial water on the agricultural production is requested.

R645-302-321-260 Analysis of Aerial Photography Showing Seasonal Difference between Valley and Upland Vegetation.

Appendices 7-7 provides two aerial photographs of the valley floor. Plate 3 provides infrared imagery that was flown in July 15, 2006. Plate 4 provides imagery that was flown November 2, 2007. The applicant has labeled areas of wet meadow and wet pasture, and this vegetation type was described in the application. No acreages were provided. Although the imagery was referenced in the Application, there was no analysis provided of the two plates to show late summer and fall differences between upland and valley floor vegetative growth.

Information on the ground water found in the geotechnical boreholes (Appendix 5-1) has been included in the discussion of ground water and seasonal variation in App. 7-7 (p. 7). Seasonal variation of the piezometers is portrayed in hydrographs in Figure 3 and on Table 1 of App. 7-7. Variation of the depth to ground water and aquic conditions in the alluvial sediments, as observed in the soils pits, is provided in Table 2 and Figure 5 of App. 7-7, but seasonal variation is not discussed. Figure 6a and associated cross-sections provide a schematic representation of the thickness of the alluvium, stratigraphy, and depth to ground water at monitoring locations. Seasonal variation in alluvial water levels and vegetation changes was not noted (App. 7-7, p. 8), but was reported to be just below the surface at the beginning of the growing season, falling to a couple feet below the surface at the end of the growing season (App. 7-7, pg. 10). Seasonal variability of springs outside of the permit area was referenced on p. 11, App. 7-7. The applicant noted no specific correlation between seasonal variations of water levels and vegetation changes.

Adjacent Area

The Division is required to protect adjacent areas designated as alluvial valley floors, as per R645-302-320 and R645-302-322. Adjacent area is a defined term and means the area outside of the permit area where a resource or resources are or reasonably could be expected to be adversely impacted by the proposed coal mining and reclamation. As applied to an AVF determination, the adjacent area should include areas where there are characteristics used to evaluate the AVF and particularly areas where the hydrology regime may be affected by the mining and consequently may affect an AVF.

Adjacent alluvial valley floor areas are shown on Figure 3 of Appendix D of the 1983 OSM Alluvial Valley Floor Determination Guideline. The Applicant addresses the characteristics of Robinson Creek and Kanab Creeks in relationship to alluvial valley floors, but does not specifically classify them as alluvial valley floors. Adjacent agricultural areas along

Kanab Creek and lower Sink valley should be documented in accordance with R645-302-322.100 and R645-302-322.200.

Adjacent alluvial valley floors should be mapped and agricultural production in these areas should be described (acreage under production in pasture or crop land, value of crop/acre, location of irrigation diversions and pond structures, water quantity and quality, etc.) so that the Division can assess the significance of these adjacent areas and the potential affects of surface mining on these adjacent agricultural operations.

Findings:

In accordance with R645-302-321.300, the Division must make a finding of the extent of any alluvial valley floors within the study area (permit and adjacent area).

The Division notes that Appendix D of the 1983 OSM AVF Guidelines acknowledges the topography does not fit the typical flood plain and terrace system, but that the topography is suitable for irrigation. The Division notes that neither the federal or R645 Rules use the term "continuous channel" to define alluvial valley floor and that the discontinuous channels shown on Plate 1 seem to coincide with the historically developed pastureland shown on Dwg 3-1. Although the Applicant's field investigation indicates the main Sink Valley Wash channel is not continuous, Figure 19 shows a stream channel in Sink Valley. In addition, the water rights map, Drawing 7-3, indicates continuous point-to–point diversions along the length of the Sink Valley Wash channel and the USGS Alton Topographic Quad shows a continuous channel for Sink Valley Wash. Alluvial ground water is present in confined peizometers at a depths of two to twenty feet within the proposed permit area (Table 1, App. 7-7). Unconfined water is evidenced by the numerous springs shown on Dwg. 7-1.

The Applicant states that Kanab Creek and its tributaries are downcutting. Robinson Creek, the only continuous channel in the Sink Valley Wash area, is deeply incised and appears to be actively downcutting. The Division notes that Appendix D of the 1983 OSM AVF Guidelines acknowledges the entrenched stream courses (pg D-4) and states that the central question becomes, what valleys have the capability to be irrigated?" (pg D-8). The OSM AVF assessment assumes water can be "transported to any terrace level, providing that a part of that level had historically been irrigated." (pg. D-8). The more important issue is water availability (pg D-9).

Grazing lands supported by numerous seeps and springs dominate the proposed permit area as shown in Chap 4, Ex. 4.1. Crop land is illustrated on Ex. 4.1 east of the proposed permit area. There are 260 acres of meadowland and pastureland within the proposed 653 acre permit area (table on pg.3.3, Chap. 3 and Dwg. 3-1). Both Pugh and Dame own lands designated pastureland or subirrigated meadow lands within the permit area that have been leased to Alton

Coal Development (Dwg. 3-1 and 7-7). How long the lands have been out of production was not stated. But Pugh lands were formerly quite productive.

Irrigation diversions and ponds used to support agriculture within the proposed permit area, and still provide for agriculture on the perimeter. Stockwatering is the use stated on most of the water right printouts in Appendix 7-3, but most spring and surface-diversion rights in the W/2 of Sec. 29, E/2 of Sec 30, and W/2 of Sec. 32, T. 39 S., R. 5 W., along Sink Valley Wash around and downstream of the Swapp Ranch, either cover both stockwatering and irrigation or are for irrigation only. Water quality data indicate that there may be enough water to flood irrigate; that the quality of water is sufficient to raise alfalfa or other grasses for hay crops and pasture.

In conclusion, the Applicant has not provided adequate information to refute the 1988 Division Alluvial Valley Floor determination made for Sink Valley in Sections 19, 20, 29 and 30 in T 39 S, R. 5 W. Although the Applicant has shown diminished agricultural use of the lands within the proposed permit area, water monitoring flow data from 2005 – 2007 does not demonstrate reduced flow from that collected during 1987-88 (Table 9, App. 7-7). Dry stream reaches are still dry. Swapp Hollow and Water Canyons are still the source of water for irrigation within the proposed permit area.

The Division requests the following information prior to making a final determination on alluvial valley floors, in accordance with:

R645-302-321.100, the Division continues to evaluate the existence of an AVF in the proposed permit area and has noted that Appendix 7-7 does not include a description of the AVF in the adjacent area. According to the analysis of historical information on file with the Division and the information in App. 7-7, an AVF is present to the south and west and possibly east of the proposed disturbed area. Appendix 7-7 should be revised to include information for these areas including at a minimum agricultural production and mapping of the extent of the AVF in Kanab Creek and lower Sink Valley. [DD, JH, PB, JS]

R645-302-321.260, Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. Although the application states that the imagery was used extensively by the researchers in various disciplines, the application needs to include an analysis of the two plates to show late summer and fall differences between upland and valley floor vegetative growth. [JH, PB]

R301-302-321.230, Maps showing the location of each diversion structure for all lands that are currently or were formerly historically flood irrigated on Kanab Creek and Sink Valley Creeks must include information on the alluvial valley floor west

of the proposed permit area on Kanab Creek and south of the proposed permit area in lower Sink Valley. [DD, JH, PB, JS]

R645-302-322.230, The applicant shall address whether the operation will cause or present an unacceptable risk of causing material damage to the quantity or quality of surface or groundwater that supplies the adjacent alluvial valley floor of lower Sink Valley and Kanab Creek. Information to be provided should include the volume of water expected to be intercepted during mining and the volume of water currently used in agriculture along lower Sink Valley and Kanab Creek alluvial valley floors. [DD, JH, PB, JS]

R645-302-323.110, The applicant shall show that the proposed operation would not interrupt discontinue or preclude farming on an adjacent alluvial floor in lower Sink Valley and to the west on Kanab Creek. [DD, JH, PB, JS]

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

The Natural Resources Conservation Service evaluated the soils of the proposed permit area for prime farmland status in the fall of 2006. The NRCS concluded that there were no prime farmland soils in the permit area, however soils on slopes less than 14 percent could qualify a Soils of Statewide Importance, if irrigated (Appendix 2-1, Tab 6 and M:0250005\2006\Incoming\0011.pdf).

The land has historically been used for agriculture. App 7-1, p. 9, provides a description of the agricultural use of lands within and adjacent to the permit area by cattle and for crop production. The agricultural use description includes a reference to maps, Drawing 3-1 in Chapter 3 and Drawing 7-7 in Chapter 7 that show the locations of existing undeveloped rangeland, subirrigated lands, crop lands and pastures. The Applicant states that the representation of subirrigated lands on Dwg. 7-7 does not include approximately 20 acres of dry meadows shown in Plate 3-1 on the west side of County Road 136. These dry meadows may also be subirrigated (pp. 10 and 12, App. 7-7).

Both landowners, Pugh and Dame, have leased to Alton Coal Development, LLC., lands within the permit area that are designated pastureland or subirrigated meadow lands (Dwg. 3-1 and 7-7). Seven hundred (700) bushels/acre of potatoes were raised with irrigation on the Pugh property in 1917 and in the 1950's oats and wheat crops were produced (personal communication with C. Burton Pugh, September 6, 2006). How long the Pugh lands have been out of production is not known.

Within the permit area, Richard Dame's property is designated pasture land (Dwg 3-1). Dame runs cattle on his property (personal communication with Richard Dame, September 6, 206).

Appendix 7-7, Sec. 4.1 describes irrigation and pastureland outside of the permit area.

Findings:

The Division, in consultation with the NRCS, finds that there are no prime farmlands in the permit area.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

Chapters 6 and 7 address the probable hydrological consequences and requirements for geologic resource information as required by rules R645-301- 623 and 724. The Applicant compiled, evaluated and presented a description of the regional and local geology. The application contains updates to the plates depicting the geologic conditions within the proposed area. A Utah Geological Survey publication, Geologic map of Alton Quadrangle, Kane County, Utah (2001) by Terry L. Tilton is included in the MRP. The report provides a good description of the geology of Sink Valley and the adjacent hills where mining will take place. The publication contains maps and cross-sections showing the stratigraphy and structure of the area around the minesite.

Mining will take place in the Smirl coal seam. The coal zone sits at the top of the Dakota Formation and below the Tropic Shale. The Tropic shale is about 700 feet thick. The strata in the region of the mine dip toward the north and north-east from 1 to 5 degrees. In Sink Valley the lower layers of the Tropic Shale remain. It has been broken and tilted to form hills surrounding Sink Valley. The Tropic Shale consists of expansive gray and carbonaceous silty shale and claystone. Information obtained from drilling indicates that the lower 200 to 250 feet of the formation consists of fairly uniform soft, dark gray, silty shale or thinly bedded claystone with occasional thin lenses of siltstone and occasional layers of bentonite-like clay. Where streams flow on the Tropic shale, steep sided arroyos have been cut by erosion along main streams and lateral gullies. Sink Valley is filled with alluvial and colluvial material. These Quaternary deposits include pediment alluvium, landslide deposits, mass wasting debris, and alluvial fan deposits.

Appendix 7-4 contains a report by Water Engineering and Technology, Inc., (September 1988), which describes the geomorphology and sediment characteristics of Sink Valley.

Sink Valley is a broad, low area, where flowing (artesian) springs create wetlands or fens, in some areas of the valley. Plate 2 shows the surface drainages in the vicinity of Sink Valley and the proposed Coal Hollow Mine. Sink Valley Fault bisects the mine permit area from north to south. The Applicant estimates the offset of the fault is 10 to 30 feet, with the west side lower than the east side. Mining will come in contact with the fault. There is no connection between the fault and the hydrologic system. The Bald Knoll Fault runs north-south, it lies substantially east of the mine permit area and has no influence on the mine hydrology.

Acid and Toxic Materials

The information on acid and toxic forming materials is presented in Section 623.100 and 728.320. The applicant is required R645-301-624.220 and 624.230 to collect and analyze for the potential of acid and toxic forming materials in the geological strata above, below and in the coal seam. The information is required to assess the potential for contamination of surface and groundwater by the overburden removal.

The applicant conducted a drilling program to collect cuttings and cores in 2005. Sediment, bedrock and coal samples were collected from seven locations within the project area for analysis of acid and toxic forming potential. A drill hole location map and analytic information are provided in Appendix 6-2. Samples were analyzed for texture, pH, EC, SAR, % lime, water extractable boron, total metals (including selenium), and acid base accounting. High levels of iron (>5,000 ppm) are accompanied by high pH values (> 8.6) and high SAR values (> 35) in the overburden. The overburden is not rich in carbonates and presents limited neutralization potential, with some layers containing < 50 tons calcium carbonate per kiloton of overburden. The overburden having high SAR and/or pH will have to be selectively placed to minimize the potential of salt contamination, refer to deficiency written under R645-301-731.300.

The coal seam pH values range from 5.5 to 7. The coal will be removed from the pit and stored on the surface for a limited time before being sold. Runoff from the coal storage site will be controlled and treated.

The Division received several comments that suggested coal transported from the Coal Hollow mine site could contaminate the rivers and streams if it falls along the roadside, and then is washed into the streams. The Division will forward such comments to agencies that have jurisdiction, such as the Utah Department of Transportation and to the State Highway Patrol.

One commenter suggested that the PAP should include baseline hydrologic information for the distance from the coal mine to the loadout in Cedar City. Baseline information is collected for the "**adjacent area**" that might be adversely affected by "coal mining and

reclamation operations" as defined in R645-100-200. For the purposes of geologic information, the baseline must include adequate information for an alluvial valley floor determination.

Findings:

The application does not meet the Geologic Resource Information requirements. See requests for information made under Alluvial Valley Floor and hydrologic resources.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The Applicant states that water sampling and analysis have been and will be conducted according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434 (Section 723).

Baseline Information

Petersen Hydrologic conducted a spring and seep survey in 2005 and 2006. UTM coordinates and basic parameters are listed in Appendix B of Appendix 7-1. Locations are plotted on a USGS topographic base map in that same appendix: the area covered by the survey is not identified.

Drawing 5-1 shows the existing land surface configuration, and 5-35 shows the post-mining configuration for the proposed permit area. The contour interval is 2 feet. Configuration of the adjacent area is shown on several maps, such as 7-2, but the contour interval is 40 feet.

Drawing 7-1 shows streams and springs in and adjacent to the Coal Hollow Mine permit area. Drawing 7-1 shows the locations of springs in the proposed Coal Hollow permit and adjacent area. The drawing does not show the location of wells as identified in 724.100 of the PAP. Drawing 7-7 shows locations for a number of small ponds created to impound runoff and spring discharge for stockwatering and irrigation, and conveyance ditches. The drawing base, a USGS topographic quadrangle, shows numerous small ponds that generally coincide with the ponds marked by the Applicant, although the Applicant has apparently identified ponds not shown on the topographic base. Section 722.200 states there are no significant natural ponds or lakes.

Water Rights

Water rights are shown on Drawing 7-7 and described in Section 731.800 of the PAP. Printouts from the Division of Water Rights are in Appendix 7-3. Identifying labels on Drawing 7-7 correspond to reference numbers the Applicant has placed in the upper right corner of the water rights printouts in the appendix. The appendix is divided into Exhibit 7-1 –Stream Reaches, Exhibit 7-2 – Surface Diversions, and Exhibit 7-3 – Springs (respectively SR, SD, and SP on Drawing 7-3).

The Division conducted a search of the water rights in the Sink Valley area, because no well water rights are identified on Drawing 7-3. The search found some surface and ground water rights not identified by the applicant. The water rights shown in Township 39 South, Range 5 West are identified in the table below. A complete search of the water rights needs to be conducted and submitted in a table that identifies the water right, type of water right, the amount of the right, ownership and status.

Information from Water Rights

85-350	spring	area 1 1.0 cfs	Richard Dame
85-351	spring	area 2 0.25 cfs	Richard Dame
85-352	spring	area 30,25 cfs	Richard Dame
85-353	spring	area 4 1.0 cfs	Richard Dame
85-363	Swapp Cny CR.	10 cfs	Darlynn and Arlene Sorensen
85-364	Swapp Cny CR.	10.0 cfs	Darlynn and Arlene Sorensen
85-365	Swapp Cny CR.	10.0 cfs	Darlynn and Arlene Sorensen
85-367	Right Hand Wash	10.0 cfs	Darlynn and Arlene Sorensen
85-368	Right Hand Wash	10.0 cfs	Darlynn and Arlene Sorensen
85-369	Sink Valley Wash	10.0 cfs	Darlynn and Arlene Sorensen
85-370	Sink Valley Wash	10.0 cfs	Darlynn and Arlene Sorensen
85-371	Sink Valley Wash	10.0 cfs	Darlynn and Arlene Sorensen
85-760	well	0.015 cfs	Darlynn and Arlene Sorenson
85-388	well	2.0 cfs	Golden Circle Tours

Baseline Monitoring

Table 7-1 presents the location, source and use of baseline monitoring stations. Table 7-5 shows the hydrologic monitoring locations for surface and groundwater sites, and it lists the protocols for monitoring parameters and frequencies identified in Table 7-4. Table 7-6B identifies the list of field and laboratory parameters the applicant proposed to monitor quarterly for surface baseline sites. Table 7-7A identifies the list of field and laboratory parameters the applicant proposed to monitor quarterly for groundwater baseline sites.

The Applicant describes 11 surface-water baseline-monitoring points in Section 724.200. The following summarizes what is in the Division's electronic database for these sites: Table 4 of Appendix 7-1 also contains discharge and water quality data for these sites and discharges are plotted in Figure 13 of Appendix 7-1. Although data are missing for some quarters at certain sites, data collection is ongoing.

F - field parameters only; **B** - baseline parameters; **NA** - no access

Qtr.	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8	SW-9	SW-101	RID-1
1-87											
2-87		F									
3-87	F	F	F			F	F	F			
4-87	F	F	F	F	F	F	F	F	F		
1-88	F	F	F	F	F	F	F	F	F		
2-05		B	B		B			B	B	B	
3-05		B	B		B	B		B	B	B	
4-05		B	B				B	B	B	B	B
1-06	B	B	B			B			B	B	
2-06	B	B	B	B	B	B		B	B	B	B
3-06	B	B	B	B	B	B	B	B			
4-06	B		B	B	B	B	B	B		B	B
1-07	B	B	B	B	B	B	B	B	B		B
2-07				B	B	B	B		B	B	
3-07	B	B		B		B	B	B	B	B	B
4-07	B	NA	B	B	B	B	B	B	B	B	B
1-08		NA	B	NA	B	B		NA	B	B	NA
2-08											

Drawing 7-2 and 7-12 show locations of stations used for baseline monitoring; 7-12 also identifies locations of wells used to monitor ground water in previous studies. These previous studies include a number of published studies that are referenced in the Application and data from an earlier permit application by Utah International, Inc. Relevant Utah International data have been included as part of the baseline information. The Applicant began its own baseline monitoring program of streams, wells, seeps, and springs in the 2nd Qtr 2005 and the data have been submitted to the Division's electronic database. Data collected up to March 2007 are listed in Table 4 in the submittal: the Division's database has data through the 1st Qtr 2008.

The Applicant has submitted water quality and quantity baseline data electronically to the Division's database. Data from previous studies have been incorporated into the baseline data and hydrologic analysis in the permit application; the older data are tabulated in Appendix 7-1.

Springs

The manner in which the applicant presented baseline water monitoring information is a little confusing and takes some effort to locate all the monitoring sites and data. For instance, data for spring Sp-27 has been submitted to the water monitoring database for the past three years. The SP-27spring site is located on Drawing 7-1 but not on Figure 20 of the Peterson Report. Sorensen Spring is identified on Figure 20 of the Peterson Report, but not on any of the PAP drawings. [All flow data for SP-27 report <0.1 gpm with a single measurement for specific conductance of 4,640 umhos/cm. A full laboratory analysis for SP-27 is also in the Peterson Hydrologic Report 2007.] In addition, the narrative indicates the bore holes on Drawing 7-2 are not monitoring wells, and the Legend on that drawing does not identify them as monitoring wells. The narrative implies only some – or perhaps none – of the bore holes and wells shown on Drawings 7-2 and 7-12 were used to provide baseline for the submittal. Table 7-1 lists monitoring station details such as location and elevation, but Table 7-2 also contains monitoring well details – the distinction between the information on these tables is unclear. Section 722.400 states water well locations are on Drawings 7-2 and 7-12, but there is no way to distinguish them from the other wells and boreholes.

The applicant needs to consolidate both spring and well information so it is consistent and more readily accessed. The applicant should develop a table to show all springs, which ones are monitored, which ones have water rights, ownership, flow range, which map they are located on and how they are monitored (i.e. field and quality parameters, field parameters, flow).

Several boreholes encountered water at depths of approximately 10 – 15 feet, and flowing sands were found at 15 to 25 feet. The subsurface investigation was done during a period of high snowmelt; seasonal fluctuations of water levels of several feet are not uncommon (Appendix 5-1, Section 4.3). Drill logs, by Petersen Hydraulic and Taylor Geo-Engineering, are in Appendix B of Appendix 5-1. Geotechnical data from the boreholes are in Appendices C-1 and C-2 of Appendix 5-1. Drilling and sample locations are shown on Drawing 5-39.

Drawing 7-1 shows two clusters of springs in the vicinity of the mine permit area, and associated with the alluvial plain of Sink Valley Wash, one is centralized on the northwest corner of Section 29 (Discharge Area A, Drawing 7-4) and the other is centralized on the northwest corner of Section 32 (Discharge Area B). The data shows that most of the springs within the proposed permit boundary emit very low flows. In the northern cluster, Spring SP-16 flows about 1 gpm, whereas, springs SP-22, SP-23, SP-24, SP-25 and SP-26 flow less than 0.1gpm. Spring SP-36 is shown on Drawing 7-1, but has not been reported to the DOGM Water Quality Database. Spring SP-14 has a flow range between 3 to 8 gpm. Springs lying just east of the mine permit area (also part of the northern cluster and Discharge Area A) consist of Springs SP-17, SP-18, SP-19 and SP-21, which flow less than 0.1 gpm. Springs SP-20 flows between 5-10 gpm and Spring SP-8 flows between 10 to 20 gpm. Only SP-8 is identified on Plate 7-2, as a baseline water monitoring station in the northern cluster. The DOGM database shows Springs

SP-8, SP-16 and SP-20 have been monitored for field and laboratory parameters, although Spring SP-20 has one sample showing laboratory parameter assessment. The other springs in the northern cluster have had field parameters assessed.

Water quality in the northern cluster is good. The pH ranges between 7 and 8. Conductivity is runs less than 800 umhos/cm in most samples, only Springs SP-24, SP-25 and SP-26 have conductivities in the 1,000 to 1,300 umhos/cm, which is still considered good. Heavy metal concentrations are very low. Calcium and magnesium constituents are a bit elevated.

Spring SP-6 is a low flowing alluvial spring located just outside the southern boundary of the mine permit area. SP-6 is not on Drawing 7-1, but is on Drawing 7-2. It has been monitored during several quarters during 2005, 2006 and 2007. Water quality analysis were collected and analyzed during the last three years. The water quality of SP-6 is similar to the water quality of the northern cluster springs.

The southern cluster of springs lies just south of SP-6. Springs SP-27, SP-28, SP-29 SP-30, SP-32, and SP-33. Spring SP-33 is the only spring in the cluster to be monitored for water quality and field parameters. Quarter reporting of field and laboratory parameters was submitted to the DOGM database for the past three years for SP-33, however the spring is not identified on Drawing 7-2, the measured parameters are similar to other springs in the southern cluster.

The other springs in the cluster were monitored for field parameters. All of the springs in the cluster except Spring-33 have very low flows, which range less than 0.1 gpm. Spring 33 flows between 4 and 13 gpm. The springs in the southern cluster have higher pH values (from 7.35 to 9.1), accompanied by higher levels of total dissolved solids and specific conductance, reflecting the higher levels of sodium, potassium and calcium the water has picked up as it migratesdown the valley. The levels of heavy metals do not increase substantially.

Wells

The Applicant discusses the use of wells to assess groundwater conditions in Section 724.100. The Applicant initiated a drilling program in the second quarter of 2005, which included 30 monitoring wells on and adjacent to the permit area. Investigative methods and results of the analysis of the data are described in Appendix 7-1. The information Table in 7-4 gives a list of baseline monitoring wells, Y-36, Y-38 Y-45, Y-59, Y-61, Y-63, Y-99(A2), and Y-102(A5).

The Applicant provides graphs of water elevations in wells Y-36, Y-38, Y-59, Y-63, Y-98 and Y-102. There is not a graph for Y61, however there is some discharge data in the DOGM database. The data shows Y-61 is an artesian well, however in 2007 data showed depth levels with negative values. This information needs to be clarified.

Drawing 7-12 shows the well locations for coal monitoring (boreholes) and alluvial monitoring wells. Drawing 7-13 shows the potentiometric levels of groundwater from water levels in the wells. Table 7-2 provides the monitoring well details (collar elevation, depth, depth to bedrock and screened interval. It is unclear in the table if the depth is from the top of the collar or surface. Elevations for Wells Y-59, Y-36, Y-38 and Y-98 are different between tables.

The well monitoring data has provided the applicant with the information to evaluate the groundwater regime. Drilling programs identified the depth of coal, identify overlying strata and establish the level of groundwater or piezometric surface of groundwater, Drawing 7-13. Table 10, Appendix 1 identifies two wells as having artesian flow, Y-61 and C5-130 in Sink Valley in alluvial ground water system east of the permit area (Dwg. 7-12 and 7-13, Table 1 and Table 5 in Appendix 7-1). Assessment of data from wells Y-61 and Y-102 indicates groundwater quality in Sink Valley is of good quality and plentiful. The seasonal variation of water quality is established for these two sites. These reflect the groundwater moving through Sink Valley from Water Canyon, Section 21 drainage, and Swapp drainage. The applicant conducted a drawdown and recovery test on Well Y-61. The pumping rate was 334 gpm. Both springs (SP-20, SP-8, SP-14) and wells (C2-40, C3-40, C4-30 and SS-30) were monitored for drawdown. Figures 17 and 18 in show graphs over the elapsed time of pumping.

Mining in the lower part of Section 30 will also destroy wells Y-102, C2, C7, C8, and C9 which lie within the Sink Valley groundwater trough. Groundwater monitoring should be established in the lower part of sink valley to monitor water quality changes during operational and reclamation phases.

Holes have been drilled on the west side of the drainage divide LR, LR45 CO, C6, Y49 and Y50. Well C6 was dry during four quarters in 2007. Wells CO, Y49, Y50 were monitored, but no seasonal water quality was collected. Water level data has been provided for several boreholes during the quarters of 2007 and first quarter of 2008. There is very little water quality data from wells on the Robinson Creek side of the drainage divide Figure 19, Appendix 7-1. Alluvial sediments are shallower in the Robinson side of the permit and the well information shows lower water levels. Mining in this area will destroy most of the wells.

Although there is only a small amount of monitoring information on the west side of the permit area, the applicant has established the hydrologic regime in that part of the permit area Figures 21 and Drawing 7-13. The groundwater drainage divide created by the fault and dip of the beds have isolated the west and northern portion of the mine permit from the recharge areas to the west.

The piezometric surface was derived with a paucity of well data on the west and north side of the permit. The method used to derive the piezometric surface must be described.

The applicant will need to show the seasonal variation of ground water on a map for the entire permit area and adjacent area.

When no longer needed for monitoring or other use and upon a finding of no adverse environmental, health or safety effects, or unless approved for transfer as a water well under R645-301-731through 731.522 and 731.800 each well will be capped, sealed and backfilled, as required by 631.100 and 748.

No wells with water rights are shown in Drawing 7-3. The applicant needs to consolidate well information so it is more readily accessed. The applicant should develop a table to show all wells which are in the database, Tables in Appendix 7-1and show which ones are monitored, which ones have water rights, ownership, collar elevation, ground elevation depth to water from ground, elevation of water, which map they are located on and how they are monitored (for field and quality parameters, field parameters, elevation only).

Public comment

The Division received a comment that baseline water quality and quantity data were not sufficient, that one or more season's data were missing for some sites, and that data have not been collected for two years. The Division's Tech-004 is cited: Tech -004 is a guideline, not a rule, and is not enforceable. Tech-004 advises one year of baseline data, adequate to describe seasonal variation, before the submission of the application.

The Applicant has identified that, in and adjacent to the proposed permit area, ground-water resources in the Tropic Shale and Dakota Formation are limited, and neither is a significant source of ground water. Information supporting this conclusion is found in Section 721. Chapter 6 and Appendix 7-1 contain information on the lithology and stratigraphy of the Tropic and Dakota strata. Bore-hole logs in Appendix 6-4 indicate strata overlying and immediately underlying the Smirl Coal do not possess aquifer characteristics. Vertical and horizontal ground-water flow in the Dakota Formation is impeded by the presence of low-permeability shales that encase the interbedded, lenticular sandstone strata in the formation, and the natural flow of ground water through the formation is meager, with only minor discharge from the Dakota to springs or streams in the surrounding area. The Tropic Shale that overlies the Dakota limits vertical recharge (Section 624.100; Groundwater).

In the proposed permit and adjacent area, the Tropic Shale and Dakota Formation strata provide no baseflow to streams or water from wells. The Applicant has identified one small spring (SP-4; average flow >1 gpm) and two seeps (SP-27 - also known as Clampett Spring - and SP-34) that flow from the Dakota Formation in the area just south of the proposed mine (Drawing 7-1). Mining of the Smirl Coal, at the Tropic – Dakota interface, is not expected to intercept significant volumes of water from these strata nor adversely impact any aquifer below the coal.

Slug tests on wells screened in the Smirl Coal Seam indicate relatively low hydraulic conductivity values (Table 7-8). In much of the proposed mining area, the coal seam has been found to be dry. Neither large inflows of ground water from the coal seam into mine workings from the Dakota Formation nor seepage out of mine pits through the coal seam is expected.

The Division received a comment that the boreholes did not extend to the aquifers in the Dakota Formation. Borehole logs in Appendix 6-4 contains representative drill hole logs depicting the nature, depth and thickness of the coal seam to be mined, rider seams in the overlying strata and the nature of the Dakota Formation strata immediately below the coal seam to be mined, which meets the requirements of the Coal Mining Rules. A comment was received that there were no contour maps or cross sections depicting seasonal difference in head for aquifers in the Dakota Formation, that there are no water monitoring wells in the Dakota Formation, and that there is no description of the geology that includes any aquifer below the lowest coal seam to be mined. Since there is no indication of an aquifer or other significant subsurface water resource in the Dakota strata, in and adjacent to the coal seam to be mined, the Division has not required the Applicant to provide maps or cross-sections or install monitoring wells in the Dakota Formation.

A comment was received that there is no description of the geology that includes any aquifer below the lowest coal seam to be mined, and that samples have not been collected from that aquifer. The Navajo Sandstone aquifer is a regional aquifer that provides ground water of good quality for domestic and agricultural use and to municipal wells. It provides baseflow to springs and streams, and it is the first water-bearing strata underlying the Smirl Coal Seam that can produce appreciable quantities of ground water. The Navajo Sandstone does not crop out in the proposed Coal Hollow Mine permit and adjacent area, is effectively isolated from proposed mining areas by more than 1,000 feet largely low-permeability shales and siltstones of Dakota and Carmel Formations, and is not reasonably expected to be impacted by proposed mining operations. The Navajo Sandstone is described in Sections 621, 624.100, 728.310.

The Navajo Sandstone aquifer is a regional aquifer that provides ground water of good quality for domestic and agricultural use and to municipal wells. It provides baseflow to springs and streams and the first water-bearing strata underlying the Smirl Coal Seam that can produce appreciable quantities of ground water. It is described in Sections 621, 624.100, 728.310).The application contains geologic information in Chapter 6, Appendix 7-1, and other sections of the submittal. This information is not sufficient to assist in determining the PHC of the proposed operation on surface and ground waters in the proposed permit and adjacent areas, determining whether the required reclamation can be achieved, and whether the proposed operation has been designed to prevent material damage to the hydrologic balance in the adjacent area. The Sink Valley Fault and associated Tropic Shale ridge are important features in the surface and subsurface hydrology of Sink Valley Wash. The Permittee needs to show the extent and depth of the proposed pits on the geologic cross sections of Drawings 6-3, 6-7, and 6-8. Also, to more clearly convey the importance of the Sink Valley Fault and associated Tropic Shale ridge in the relationship of the hydrologic systems to the proposed mine, the Permittee needs to show the

Sink Valley Fault on several other maps and cross sections, including but not limited to: Drawings 7-1, 7-4, 7-7, 7-12, 5-10, 5-17, 5-18, and 5-19. As an alternative, the Permittee could create new maps and cross sections that clearly show the relationship of the proposed pits to the Sink Valley Fault, the Tropic Shale Ridge, the alluvium, and the springs, wells, and surface water.

Baseline Cumulative Impact Area Information

The Division has not initiated the CHIA findings document. Information from the permit application will be used along with information from other sources in preparing the CHIA. The applicant may be required to provide additional information.

Modeling

No modeling has been submitted or proposed for the Coal Hollow Mine permit application.

Probable Hydrologic Consequences Determination

Section 728 contains the PHC Determination, and there is also discussion in Section 724.500. A comment was received that the PHC determination was not based on baseline geologic and hydrologic information "collected for the permit application". The Division finds that there are deficiencies in some of the baseline data and therefore there are deficiencies in the Applicant's PHC determination. The following sections summarize the Applicant's PHC determination and deficiencies identified by the Division.

Potential Adverse Impacts to the Hydrologic Balance (728.310) The Applicant does not expect to encounter appreciable amounts of groundwater in the Tropic Shale due to the heterogeneity of the rock strata, which impedes flow. Similarily, impacts to groundwater resources in to Dakota Formation are not expected. The Navajo Sandstone is the first major aquifer below the Smirl Coal seam. It lies about 1000 feet below the coal seam and should not be influenced by mining. The application states that information from drilling and aquifer tests indicates that large inflows to the mine pit are not expected; if such inflows develop as mining progresses, the Applicant commits to use techniques such as bentonite- or clay-filled cutoff walls to minimize inflows. Temporary reductions in flow from alluvial aquifers may occur but are likely to be short-lived as the pits will remain open for only 60 to 120 days.

Direct Interception of Ground-water Resources

The applicant has identified that ground-water resources in the Tropic Shale and Dakota Formation are limited and neither the Tropic Shale nor Dakota Formation is a significant source of ground water. Information supporting this conclusion is found in Section 721. Chapter 6 and

Appendix 7-1 contain information on the lithology and stratigraphy of the Tropic and Dakota strata. Bore-hole logs in Appendix 6-4 indicate strata overlying and immediately underlying the Smirl Coal do not possess aquifer characteristics. In the proposed permit and adjacent area, these strata provide no baseflow to streams or water from wells. The Applicant has identified one small spring (SP-4; average flow >1 gpm) and two seeps (SP-27 - also known as Clampett Spring - and SP-34) that flow from the Dakota Formation in the area just south of the proposed mine (Drawing 7-1). There are no wells in the proposed permit and adjacent area that produce water from the Tropic Shale or Dakota Formation. Mining of the Smirl Coal, at the Tropic – Dakota interface, is not expected to intercept significant volumes of water from these strata nor adversely impact any aquifer below the coal.

Diminution of Downgradient Ground-water Resources

The applicant has identified that neither the Tropic Shale nor Dakota Sandstone are a significant source of ground water. In the proposed permit and adjacent area, the Dakota Sandstone supports flow from one small spring and a few seeps that have no associated water rights.

Draining of Upgradient Ground-water Resources

Based on information from water monitoring wells, including slug tests and a pumping and recovery test of Y-61, and analysis of the geology and hydrology of the proposed permit and adjacent area, the applicant has concluded that the proposed mine plan is designed to minimize potential diminution of flow from the alluvial springs in eth proposed permit and adjacent area.

The applicant notes that after the pump Y-61 was stopped at the end of the 28-hour pumping test, spring discharge rates and water levels in alluvial monitoring wells recovered to approximate pre-test levels: the data in Appendix 7-1 do not show this, rather indicating the measurements ending after only 30 hours for SP-20 and SP-14, 29 hours for C3-40, 28 hours for C2-40, and not even running to the end of the pumping period for SP-8, C4-30, and SS-30. The applicant needs to provide the data for the complete recovery period, or at least include the next quarterly measurement to show the approximate extent of recovery.

The relationship of the alluvial ground-water table to wells and springs in and adjacent to the NW1/4 of Sec 29 is crucial in understanding the PHC of the proposed mining operation. Figure 18 in Appendix 7-1` indicates water levels actually increased at SP-8 and flow increased at C2-40 and SS-30 after 4 hours of pumping (the location where the water was discharged is not described). A series of contour maps or cross section showing the progressive changes in the water table during the pump drawdown test would probably be very enlightening to both the applicant and the Division.

If inflows to the mine pits become excessive as mining progresses, the Applicant commits to use techniques such as bentonite- or clay-filled cutoff walls to minimize inflows.

Temporary reductions in flow from alluvial aquifers may occur but are likely to be short-lived as the pits will remain open for only 60 to 120 days.

Water replacement is discussed in Section 727. Long-term diminution of flow will be replaced with water from a well (Y-61 on maps in the application), located on land owned by Richard and Alecia Dame (Drawings 7-2 and 1-3); the Applicant states that the town of Alton has entered into an agreement to transfer the point of diversion for water rights to 50 acre-feet of water to be used to satisfy the Applicant's water replacement needs. The Applicant states that the access agreement with the Dames is verbal but that written agreement is forthcoming; a copy of the written agreement needs to be in the permit application before it can be approved. Also, a copy of the point-of-diversion transfer agreement with the town of Alton must be in the application. Without these two written agreements, there is no sound foundation for the Applicant's claim to be able to meet the water replacement requirements of the Coal Mining Rules.

Acid and Toxic-forming Materials (728.320)

Acid- or toxic-forming materials do not appear to be present in the proposed permit and adjacent area in amounts that create a concern. Appendix 6-2 contains information on the acid- and toxic-forming potential of earth materials naturally present in the proposed permit and adjacent areas. Appendix 6-1 (confidential binder) has information on the Smirl Coal Seam proposed for mining.

Sediment Yield from the Disturbed Area (728.331)

Sedimentation ponds, diversion ditches, and silt fences and other sediment control devices have been designed to minimize erosion from disturbed areas and control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area.

Impacts to Important Water-quality Parameters (728.332)

The applicant does not anticipate discharge of waters from the Tropic Shale or Dakota sandstone. The plan calls for limiting inflow of alluvial waters into the pits, reducing the potential for contamination, mainly from increased TDS concentrations.

The applicant anticipates that water will not be discharged from the mine pits, but data and analysis or discussion are not presented in support of this assertion. Alluvial water will be diverted away from the pits. The applicant does not have a UPDES permit, but commits that any discharges from the mine will be done under a UPDES permit.

Geochemical data indicate the potential for AMD and toxic drainage is low: the applicant needs to reference where these data and the applicant's analysis and discussion of the data can be found.

Sedimentation ponds and other sediment control methods will minimize erosion from disturbed areas and control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area.

The applicant commits to using spill control kits on all equipment to minimize contamination from spillage of hydrocarbons, and that the site will have a SPCC plan.

The applicant states that where possible, ground water encountered in alluvial sediments along the margins of mine pit areas will be drained through pipes, ditches or other conveyance methods away from mining areas to prevent or minimize the potential for interaction with sediments disturbed by mining operations. There are no designs for these structures and no indication of where the water will go.

The applicant states that as ground water migrates through the shallow, fine-grained alluvial sediments in the proposed Coal Hollow Mine permit and adjacent area (most notably in Sink Valley), the quality of the water are naturally degraded: Appendix 7-1 is referenced for this information. The application needs a map or drawing that uses Stiff diagrams or some similar representation to show this degradation. In the distal portions of Sink Valley, concentrations of magnesium, sulfate, and bicarbonate are most notably elevated in the alluvial ground water.

The application states that pumping and discharging of mine water from mine pits at the proposed Coal Hollow Mine permit area is not anticipated. The applicant does not anticipate water entering the pit from adjacent strata, but this may prove to be incorrect. Flooding of pit mines by heavy precipitation is a known occurrence and a real possibility at the Coal Hollow Mine, as the applicant states,

> *The anticipated discharge rates from alluvial groundwater drainage and the maximum reasonably foreseeable amount of mine discharge water that could potentially be required to be discharged from mine pits is much less than that periodically occurring during major torrential precipitation events.*

The mine must have a plan for pumping and disposing of water from the pit.

Flooding or Streamflow Alteration (728.333)

The application states that rates at which alluvial ground water could drain into the mine pits will likely not be sufficient to potentially cause flooding or stream flow alteration in either Sink Valley Wash or Lower Robinson Creek drainages. The potential alluvial ground water inflow is not quantified, nor is there any discussion supporting to the conclusion that discharge of the drainage will not sufficient to cause flooding or streamflow alteration.

Where are the data and analyses that support the statement (p. 7-34) that anticipated discharge from the alluvial drainage into the pits and the reasonably foreseeable amount of water to be discharged from the mine pits is much less that that from periodic rainstorms?

The applicant finds it noteworthy that the principle surface drainages in and adjacent to the proposed Coal Hollow Mine permit area, i.e., Lower Robinson and Kanab Creeks and their tributaries, are in many locations not stable in their configurations. The application gives land management practices in the late 1800s or early 1900s as the reason for this instability; the application does not give the source of this supposition nor discuss the impact of the proposed Coal Hollow Mine on this instability.

The applicant states that Sink Valley Wash has a large discharge capacity and conveys large volumes of runoff periodically, yet the applicant asserts elsewhere that this is not a continuous channel. The applicant needs to clarify and rectify this apparent incongruity.

The application states in Section 728.333 that most precipitation waters falling on disturbed areas will be contained in diversion ditches and routed to sediment impoundments that are designed to impound seasonal water and storms. (Does "most" refer to 51% or 99% of the precipitation? Where are the data and analyses to quantify this statement?)

In the proposed mining plan, Lower Robinson Creek is to be diverted permanently. Appendix A5-2 details the analysis and specifications and Drawings 5-20 and 5-21 show the design details. The resulting channel will have straight reaches and three sharp bends - including two 90° bends - and will require extensive rip-rap. The application does not contain a justification for such an unnatural and potentially unstable configuration, which does not restore or approximate the premining characteristics of the original stream channel or return the site to AOC (acknowledging that the "premining" channel is deeply incised and actively eroding headward). Unless the applicant can present a compelling argument that the proposed plan is superior for stability and longevity, the Division will press for final reclamation to be a sinuous channel configuration, near the current channel location, that will not require heavy use of rip rap and which will more closely match the characteristics of the natural, original (premining but also pre incision and head-cutting) stream channel and AOC. Such a configuration can produce a flatter flow gradient and stable slope angles and support vegetated slopes - the same positive channel attributes the applicant seeks with their more radical design.

Ground Water and Surface Water Availability (728.334)

The application states (Sec 728.334) that irrigation has not occurred during the past 10 years, but provides no basis for this statement.

The application states that potential decreases in alluvial discharge in Area A are anticipated to be short lived. There is no quantification or discussion of this assertion. What would be the worst case scenario, and how would the mine deal with it?

The Division received comments that groundwater will be depleted and contaminated when mining takes place. The Division has evaluated the PAP for potential impacts mining will have on the groundwater systems of Lower Robinson Creek and Sink Valley wash. The coal recovery area is shown on Drawing 5-14. The recovery area follows the approximate location of the fault on the east side of the permit. The drawing shows the coal thickness ranges from 7 feet (on the west) to 18 feet on the east side of the permit area. Overburden thickness in the coal recovery area ranges from zero the about 200 feet on the east side of the permit boundary near the fault. Most of the coal in the recovery area lies below 140 feet. Drawing 5-16 shows the sequence of mining and extent of the surface disturbance from mine pit development. Plate 5-12 shows the typical cross-section of the mine pit.

The first year of mine development will take place in the Robinson Creek drainage. It is expected that the mine will encounter only minor amounts of ground water in the colluvial deposits above the permit area and groundwater trapped in the coal zone. The second and third years will see Pit 2 and Pit 3 developed in the eastern part of the permit. As the mine progresses westward the bottom of the pit will not extend all the way to the permit boundary, but stop at a point where the pit walls, angled at about a 2:1 slope, will extend from the pit floor to the permit boundary. When the pit walls are excavated on the east, mining will mine through the west side of the alluvial trough (Petersen Hydrologic Report Figures 6d, 6e, and 6f Petersen report). This alluvial trough holds and channels groundwater from the drainages to the lower basin of Sink Valley. These cross-sections should be extended westward to include the mine pit, such that an idea of the elevation of the cut and the lowering of the gradient of the groundwater in Sink Valley could be ascertained. The applicant must supply cross-sections, that depict the mine pit, and Sink Valley trough, and show the expected change to the groundwater head as a result of mining. The applicant should discuss how the pit will be reclaimed to restore the groundwater level in Sink Valley.

The information supplied indicates the Sink Valley aquifer may be drawn down substantially. As an example, if one looks at cross-secton D-D'q in Figure 6e, Petersen Hydrologic Report, January 15, 2008) and imposes the mine pit in relation to the cross-section. The mine pit is expected to be about 110 feet in the area of Well C-3, Drawing 5-15. The mine pit wall angle is about a 2:1 slope, Drawing 5-12. That puts the bottom of the pit 220 feet from the mine permit boundary. As mining removes the western edge of the trough that holds the aqifer flow from the aquifer will enter the mine. Rough estimates near Well C-3 show the aquifer could be lowered 30 feet, which equates to a large volume of water. When one considers that the Sink Valley aquifer will be mined into almost a mile, groundwater interception could be substantial if the replacement material does not seal the aquifer.

The recharge source from the east works in favor of still supplying the aquifer. The Division suggests the applicant consider installing wells along the east side of the permit area and pump groundwater back to Sink Valley, to the channel where some flows can be used. It will eliminate flow to the pit where it can become more contaminated. It will also eliminate pumping to Kanab Creek via Robinson Creek.

The application states that water replacement is to be from well Y-61. The pump test at Y-61 is discussed in Section 9.3 of Appendix 7-1. The applicant notes that after the pump on Y-61 was stopped at the end of the 28-hour pumping test, spring discharge rates and water levels in alluvial monitoring wells recovered to approximate pre-test levels: the data in Appendix 7-1 do not show this, the measurements ending after only 30 hours for SP-20 and SP-14, 29 hours for C3-40, 28 hours for C2-40, and not even running to the end of the pumping period for SP-8, C4-30, and SS-30. The applicant needs to provide the data for the complete recovery period, or at least include the next quarterly measurement to show the approximate extent of recovery.

The limited information in the application does not demonstrate that Y-61 can produce sufficient water to provide for long-term water replacement; the information indicates the well can pump up to 50 acre-feet per year, the amount allowed by the pending point-of-diversion transfer, but is the worst case scenario more or less than 50 acre-feet? Statements in Section 729.310 indicate nearby springs and wells were affected but did not appear to suffer long-term impacts from the 28-hour pump test in Y-61, but the question remains as to what pumping at the maximum rate for a prolonged period would do to the alluvial aquifer, springs, and wells.

Sink Valley Wash and Lower Robinson Creek drainages supply surface water that is available for use in the proposed permit and adjacent area. Runoff from the adjacent Paunsaugunt Plateau is the main source of water.

The Applicant concludes that there is essentially no probability that surface water in the Sink Valley Wash drainage could become unavailable as a result of the proposed mining and reclamation activities: the surface waters originate from up-gradient areas that are located large distances from the proposed mining, and the stream channels are entirely outside the area to be disturbed by mining and reclamation activities. The Applicant provides Plate 2 and Figure 19 (PHR) showing the surface water drainages. Three major drainages appear in the vicinity of the mine: the upper Kanab Creek Drainage, the Sink Valley Drainage and Johnson Wash Drainage. These drainages, as well as Lower Robinson Creek Sub Drainage and Dry fork Sub Drainage are the recharge source for Sink Valley. The bulk of the groundwater fluxes through the area on the eastern side of the mine. Sink Valley is made up of course grained alluvial and coalluvial sediments that transmit the groundwater. Maps of the Sink Valley Drainage, as shown in Figure 21, Appendix 7-1 Drawing 7-4 shows two major locations of alluvial groundwater discharge areas east and southeast of the mine permit area. Figure 7-13 shows the potentiometric level of groundwater in the alluvial/Sink Valley area. In this same map the applicant shows the

approximate location of the alluvial groundwater divide between Sink Valley and Lower Robinson Creek drainage.

The application states that in the Sink Valley Wash drainage, surface-water flows in Water Canyon and Swapp Hollow are used for stock watering and limited irrigation: Drawing 7-3 shows there are water rights for surface point-of-diversion and point-to-point diversions along Sink Valley Wash but none in the two mentioned tributary drainages (monitoring at point SW-8 in Swapp Hollow has consistently noted flow in this channel). The application also states that below Section 29 T. 39 S., R. 5 W., Sink Valley Wash usually has no appreciable discharge: there are point-to-point and surface point-of-diversion water rights in Sink Valley Wash below Section 29 (Drawing 7-3).

Drawing 7-2 shows the only surface-water monitoring point in the main channel of Sink Valley Wash is SW-9 in Section 6, T. 40 S., R. 5 W., approximately 2 miles south of the proposed permit area; SW-6 is on a small tributary branch that drains the southernmost portion proposed permit area. Baseline data show flows at these locations have been ephemeral and episodic. On March 22, 2008, flow was 1,370 gpm at SW-6 but there was no flow at SW-9 (SW-8 in Swapp Hollow was inaccessible).

The application indicates Lower Robinson Creek immediately above the proposed permit area typically discharges only in direct response to precipitation or snowmelt, so surface-water availability is limited. Ground water seeps from the alluvium into the deeply incised stream channel near the exposed Dakota-alluvium contact in the bottom of the stream channel, in the SE¼, Section 19, T. 39 S., R. 5 W. (the applicant considers it noteworthy that the location of this discharge has varied somewhat over time, but offers no further comment). This seepage, monitored at SW-5 (Drawing 7-2), is characterized as usually 5 - 10 gpm or less: significantly larger flows, as great as 410 gpm, have been reported at this site (Division's database), although such large flows are presumed to be runoff – the database does not distinguish seepage from runoff.

Surface-Water Monitoring Plan

The protocol for baseline and operational surface-water monitoring is in Tables 7-4 through 7-6B. Drawing 7-2 shows baseline monitoring locations. Section 724.200 discusses baseline surface-water monitoring; three paragraphs at the end of Section 724.200 describe baseline surface-water monitoring sites. Discrepancies between Section 724.200, Drawing 7-2, and Table 7-5, shown in the following table, need to be resolved.

Baseline Monitoring Sites	Described in Section 724.200	Listed in Table 7-5	Shown on Drawing 7-2	Data in Database

SW-1	√		√	√
SW-2	√	√	√	√
SW-3	√	√	√	√
SW-4	√	√	√	√
SW-5	√	√	√	√
SW-6	√	√	√	√
SW-7	√		√	√
SW-8	√	√	√	√
SW-9	√	√	√	√
SW-10			√	√
SW-18			√	
SW-101	√	√	√	√
BLM-1		√	√	√
RID-1	√	√	√	√
Lamb Canal			√	√

The Applicant will apply for a UPDES permit to discharge from the mine pit, to either Lower Robinson Creek or Sink Valley Wash, which are both tributary to Kanab Creek.

Findings:

The Division analyzed surface and groundwater data from the database and PAP to determine whether sufficient monitoring information was available to assess the hydrologic regimes, establish seasonal variation, and the potential adverse impacts to the hydrologic balance for the PHC, the Division does not find the data sufficient, see deficiencies written below.

The applicant has not submitted sufficient information to show the hydrologic balance will be maintained. Geologic information identifies a hydrologic barrier between the Sink Valley aquifer and the proposed mine pit. Information presented in the Petersen Hydrologic Report Figures 6d, 6e, and 6f shows the level of groundwater at different monitoring sites in Sink Valley. Mining of the pit will remove some of the barrier that contains the groundwater in Sink Valley. Extending the cross-sections westward to include the mine pit will allow the reviewer to see the reduction of the hydrologic barrier and potential change of the groundwater level.

R645-301-121.200, The applicant needs to present data and information that supports all conclusions and assertions in a clear and concise manner. Data and other information can be presented and discussed and analyzed in appropriate locations, and then other sections referenced to those sections, rather than repeatedly presenting broad assertions and generalizations. • The application states in Section 727 that well Y-61 has a borehole diameter of 8.625 feet; this must be corrected.• The applicant states that as ground water migrates through the

shallow, fine-grained alluvial sediments in the proposed Coal Hollow Mine permit and adjacent area (most notably in Sink Valley), the quality of the water are naturally degraded: Appendix 7-1 is referenced for this information. The application needs a map or drawing that uses Stiff diagrams or some similar representation that will clearly show this degradation. • The surface-water baseline discrepancies between Section 724.200, Drawing 7-2, Table 7-5, and the Division's database, as outlined in the following table, need to be resolved. [JS]

Baseline Monitoring Sites	Described in Section 724.200	Listed in Table 7-5	Shown on Drawing 7-2	Data in Database
SW-1	√		√	√
SW-7	√		√	√
SW-10			√	√
SW-18			√	
BLM-1		√	√	√
Lamb Canal			√	√

R645-301-624, -724, The Applicant needs to show the extent and depth of the proposed pits on the geologic cross sections of Drawings 6-3, 6-7, and 6-8. Also, to more clearly convey the importance of the Sink Valley Fault and associated Tropic Shale ridge in the relationship of the hydrologic systems to the proposed mine, the Applicant needs to show the Sink Valley Fault on several other maps and cross sections, including but not limited to: Drawings 7-1, 7-4, 7-7, 7-12, 5-10, 5-17, 5-18, and 5-19. As an alternative, the Applicant could create new maps and cross sections that clearly show the relationship of the proposed pits to the Sink Valley Fault, the Tropic Shale Ridge, the alluvium, and the springs, wells, and surface water. [JS]

R645-301-720, A complete search of the water rights needs to be conducted and submitted in a table that identifies the water right, type of water right, the amount of the right, reported, ownership and status. [DD]

R645-301-722.100, The relationship of the alluvial ground-water table to wells and springs in and adjacent to the NW1/4 of Sec 29 is crucial in understanding the PHC of the proposed mining operation. The applicant must include a series of contour maps or cross section showing the progressive changes in the water table during the pump drawdown test. [JS]

R645-301-722.300, The Applicant needs to clarify the difference between the boreholes shown on Drawing 7-2 and those on Drawing 7-12 and why some are considered sources for baseline information while others are not.

- This need for clarification also applies to the narrative for this section and Section 724.100.

The difference between the boreholes and wells in Tables 7-1 and 7-2 needs to be clarified. [JS]

R645-301-722.400, The Applicant must distinguish water wells from other wells and boreholes on Drawings 7-2 and 7-12. [JS]

R645-301-724, The application must be consistent when using terms for baseline monitoring and operational monitoring. i.e. discharge and operational laboratory water quality measurement terms; discharge and field water quality measurement terms. • Identify who owns the water right on well Y-61. • Illustrate all wells with water rights on Drawing 7-3. [DD]

R645-301-724.100, The area covered by the seep and spring survey in Appendix 7-1 needs to be shown on a map or otherwise clearly identified. [JS] • Mining in the lower part of Section 30 will destroy wells Y-102, C2, C7, C8, and C9 that lie within the Sink Valley groundwater trough. Groundwater monitoring should be established in the lower part of sink valley to establish water quality changes during operational and reclamation phases. • Consolidate well information into a table so it can be more readily accessed. In the well table: show all wells noting which are in the database and which are in Appendix 7-1; show which ones are monitored; show which ones have water rights; show ownership; show collar elevation; show ground elevation; show depth to water from ground; show elevation of water; state which map a well is located on; and state how the wells are monitored (i.e. field parameters, quality parameters, elevation). • Consolidate spring information into a table so it can be more readily accessed. In the spring table: show all springs; indicate which are monitored; indicate which have water rights; indicate ownership; indicate flow range; state which map a spring is located on; and state how the springs are monitored (i.e. field parameters, quality parameters, flow). •Explain the negative values submitted to the DOGM water quality database for well Y-61. •Describe how the piezometric surface was derived with a paucity of well data on the west and north side of the permit. •Show the seasonal variation of ground water on a map for the entire permit area and adjacent area. [DD]

R645-301-724.500, The applicant notes that after the pump on Y-61 was stopped at the end of the 28-hour pumping test, spring discharge rates and water levels in alluvial monitoring wells recovered to approximate pre-test levels: the data in Appendix 7-1 do not show this, the measurements ending after only 30 hours for SP-20 and SP-14, 29 hours for C3-40, 28 hours for C2-40, and not even running to the end of the pumping period for SP-8, C4-30, and SS-30. The applicant

needs to provide the data for the complete recovery period, or at least include the next quarterly measurement to show the approximate extent of recovery. [JS]

R645-301-727, The application must include a copy of the written agreement with Richard and Alecia Dame that allows access to well Y-61 on the Dames' property. •The application must include a copy of the agreement with the town of Alton to transfer the point of diversion for 50 acre-feet of water for the Applicant's use to Y-61. • Indicate whether the Utah Division of Water Rights has approved the transfer of water from well Y-61. [JS, DD]

R645-301-728.310 The applicant has not submitted sufficient information to show the hydrologic balance will be maintained. Geologic information identifies a hydrologic barrier between the Sink Valley aquifer and the proposed mine pit. Information presented in the Petersen Hydrologic Report Figures 6d, 6e, and 6f shows the level of groundwater at different monitoring sites in Sink Valley. Mining of the pit will remove some of the barrier that contains the groundwater in Sink Valley. Extending the cross-sections westward to include the mine pit will portray the reduction of the hydrologic barrier and potential change of the groundwater level. The applicant shall supply cross-sections that depict the relationship between the mine pit and Sink Valley trough, and show the expected change in the groundwater head as a result of mining. [DD]

R645-301-728.332, -121.200, The Applicant needs to identify where in the application the following can be found (in reference to the PHC):

- geochemical data that indicate the potential for AMD and toxic drainage is low, and
- an analysis or discussion of the data, especially with regard to SAR and iron, barium, chromium, copper, lead, manganese, and zinc in the overburden. [JS, PB]

R645-301-728.333, Flooding of pit mines by heavy precipitation is a known occurrence at open cast mines and a real possibility at the Coal Hollow Mine. The mine does not anticipate water entering the pit from adjacent strata, but this may prove to be incorrect. The mine needs a plan for pumping and disposing of water from the pit. • The application needs to quantify the rate - at a minimum provide a reasonable worst-case estimate - at which alluvial ground water could drain into the mine pits: whether or not removing such water from the pit can potentially cause flooding or stream flow alteration has not been and cannot be analyzed without such information. The applicant needs to provide a basis for the supposition that land management practices in the late 1800s or early 1900s are the reason for the instability of the principle surface drainages in and adjacent to the proposed mine area. The application needs to discuss the potential impact of the Coal Hollow Mine on this instability. • The applicant states in Section

728.333 that lower Sink Valley Wash has a large discharge capacity and conveys large volumes of runoff periodically, yet the applicant asserts in the AVF section that Sink Valley Wash is not a continuous channel. The applicant needs to clarify and discuss this apparent incongruity. • The application needs to quantify the statement that most precipitation waters falling on disturbed areas will be contained in diversion ditches and routed to sediment impoundments that are designed to impound seasonal water and storms. How much water will not be contained in these structures, and what happens to water not entering diversions and ponds? • The application states (Sec 728.334) that irrigation has not occurred during the past 10 years: the applicant needs to provide a basis for this statement. [JS]

R645-301-728.334, The application needs to quantify the potential decreases in alluvial discharge in Area A (that are anticipated to be short lived). There is no quantification or discussion of the assertion. What would be the worst-case scenario, and how would the mine deal with it? [JS]

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The Applicant did not meet the requirements of this section of the regulations. Maps 1-2, Project Area LBA shows the project area and the proposed expansion for the federal leases (see also pg. 1-7 and Dwg 5-2). The Applicant must show the boundaries over the estimated total life of the coal mine of each sub-area for which they anticipate that additional permits will be sought. The Division needs to know the anticipated dates when additional areas will be added to the permit boundary because the preferred reclamation scenario is based on the assumption that the Applicant will increase the permit area.

Map 5-10, Coal Removal Sequence, does not show the anticipated dates for when coal would be mined in the expansion areas. The Division needs that information to do analysis that involves expansion of the permit areas.

Existing Structures and Facilities Maps

The Applicant did not meet the requirements of this section. The buildings shown on Drawing 1-1 are from a USGS topographic map and the description is generic. The Applicant

must specifically state what types of buildings are in or near the permit boundary. The Division needs that information because of other rules that address buildings that are outside the permit area.

Existing Surface Configuration Maps

The Applicant did not meet the requirements of this section. In Section 521.150 of the PAP, the Applicant states that for much of the permit area the accuracy of the original contour map was 5 feet. The Applicant then interpolated the information to construct 2-foot contours. The Division does not want contours that the Applicant interpolated. The Applicant must provide the Division with maps that show the original topographic contours only.

Mine Workings Maps

The Applicant did not meet the requirements of this section. The Applicant stated in Section 521.110 "Not Applicable". The Division has information on several coal mines in the area. The Applicant must mention that some mining has occurred in the area and where or not the mines were surface or underground.

Doelling lists the following mines near Alton:

- Seaman Mine
- Smirl Mine
- Alton Mine
- Johnson Mine
- Silver Mine

Permit Area Boundary Maps

The Applicant did not meet the requirements of this section. The Applicant showed on Drawing 5-3 that access to the mine would be from a road branching off from a closed portion of Kane County Road 136. That access road must be included within the permit area. In addition, the Applicant must also include within the permit area any portion of the County Road for which they control access.

Surface and Subsurface Manmade Features Maps

The Applicant did meet the requirements of this section. In Section 521.122 of the PAP, the Applicant states "Not Applicable".

Surface and Subsurface Ownership Maps

The Applicant met the requirements of this section. The Applicant provided Drawing 1-3 Surface Ownership and Drawing 1-4 Coal Ownership, which show surface and coal ownership.

Subsurface Water Resource Maps

Ground-water resources consist of both springs and wells. Artesian conditions have been documented in several wells, and some have sufficient head to flow. 7-13 shows the potentiometric or water-table elevations of the alluvial ground-water system. This is somewhat deceptive because it does not relate ground water to the surface topography, i.e., it gives the impression of a fairly uniform subsurface water table, when the data show springs and seeps, flowing wells, and areas of confined and unconfined conditions. Cross sections on Figures 6b through 6g in the Alluvial Valley Floor Supplemental Information in Chapter 7 show variation between June and November -December 2007. No map depicts seasonal variation of head in the aquifer(s). The applicant needs to provide maps depicting:

1. the relationship of water table(s) and potentiometric surface(s) to ground-surface elevations, and
2. seasonal variations in head in the various aquifers.

Surface Water Resource Maps

The locations of streams, stock watering ponds, and conveyance ditches in the proposed Coal Hollow Mine permit and adjacent area are shown on Drawing 7-7.

Archeological Site Maps

These are included in the Data Recovery plan in the confidential section of the application.

Cultural Resource Maps

These are included in the Data Recovery plan in the confidential section of the application.

Existing Surface Configuration Maps

Drawing 5-1 includes the existing surface configuration.

Monitoring and Sampling Location Maps

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

Permit Area Boundary Maps

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

Vegetation Reference Area Maps

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-121.200, The Applicant cannot use "Not Applicable" to state how they met the requirements of the Utah Coal Rules. The Applicant must state that features like previously mined area and man-made features are not present rather than those items are "Not Applicable". [WW]

R645-301-323, The application needs to include Affected Area Boundary Maps. [JH]

R645-301-521.120, The Applicant must show on Drawing 1-1 the specific type of buildings and structures that are in or near the permit boundary. The buildings shown on Drawing 1-1 are from a USGS topographic map and the description is generic. The Division needs to know the type of buildings within 1,000 feet of the permit boundary because other regulations direct what actions must be taken based on the type of building. [WW]

R645-301-521.130 through R645-301-521.132 and R645-301-521.141, The Applicant must address plans to build a public road that will bypass the town of Alton to facilitate mining. The Division has received comments from Alton residents that the town officials have been in negotiations with the Applicant to build a bypass road. The purpose of the bypass road is to route coal truck traffic around Alton. Road construction solely for the purpose of facilitating coal mining is considered "affected area" as defined by R645-100-200 and must be shown on mine maps. [WW, PB]

R645-301-521.132, The Applicant must update all permit area boundaries to show that the access road from the close section of County Road 136 to the mine site will be within the permit area. [WW]

R645-301-521.150, The Applicant states that for much of the permit area the accuracy of the original contour map was 5 feet. The Applicant then interpolated the information to construct 2-foot contours. The Division cannot rely upon contours that the Applicant interpolated. The Applicant must provide the Division with maps and cross sections based on the original topographic maps. [WW]

R645-301-722.100, The applicant needs to provide maps and cross sections depicting (1) the relationship of water table(s) and potentiometric surface(s) to ground-surface elevations, and (2) seasonal variations in head in the various aquifers. [JS]

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

The Applicant did not meet the general requirements of this section. Those general requirements include:

- In Section 523 the Applicant described the type of coal mining procedures, anticipated annual and total production of coal, by tonnage, and some major equipment they will use for all aspects of those operations.
- In Section 536, Section 528 and Section 553 the Applicant described the construction, operation and reclamation of the mine facilities. The Division will analyze specific facilities in other sections of the TA.

The Applicant has described a 2MT, 24 hr/day 6 day/week operation in Introduction to the PAP. In consulations with the Governor's Office in 2005 and with the DEQ and DOGM in 2007, the Applicant described a 2 MT, 2 shift/day, 6 day/week operation. As explained to the Governor's Office in 2005, the initial decision for a 2 shift work day was made to avoid night sky issues that were raised in the Cecil Andrus 1980 Suitability decision (Ex. 3, App. 1-3). The night sky issue has been raised by commenters during the recent public comment period and by the USFS and Bryce Canyon National Park in comments provided to the Division. The application must explain the equipment required for lighting the 24 hour operation and the effect on the night sky as seen from Bryce Canyon National Park and the Dixie National Forest

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-526.220, The application must describe the equipment required for lighting the 24 hour operation and the effect on the night sky as seen from Bryce Canyon National Park and the Dixie National Forest. [PB]• The Applicant must list and show on appropriate maps all minor facilities at the site such as gates, power lines, water lines and sewage lines. In addition, the Applicant should remove the

description of the surface facilities and from Section 521.180 and place then in Section 526. [WW]

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

In Section 526.100 of the PAP, the Applicant states that there are no existing structures within the permit area.

Findings:

The information provided in the application is considered adequate to meet the requirements of this section.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

Analysis:

Lands to be disturbed by coal mining and reclamation are not "unsuitable" as defined by 40-10-24(4) of the Act. Coal mining and reclamation operations would not adversely affect any publicly owned park or any place included in the National Register of Historic Places (R645-103-326). SHPO provided concurrence (7/14/08) on the Cultural Resource Management Plan (CRMP) and Data Recovery plan for seven archaeological sites that will be adversely affected. The CRMP and Data Recovery plans are found in Confidential App. 4-1.

Findings:

The information provided in the application meets the requirements of this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

The Applicant did not meet the requirement of this section. The Applicant must provide the Division with detailed information on the relocation of Kane County Road 136. The Applicant must state:

- The Party that will be in charge of relocating Kane County Road 136, (Kane County or the Applicant.)
- That the Kane County Road 136 will be restored to the original configuration after mining and who will be responsible for the re-establishment of the road in its original configuration.
- Whether the relocated portion of Kane County Road 136 will remain after mining operations have ceased.

If the Applicant will be in charge of relocation then they must show how the interests of the public will be protected. One item that the Division would need to see is agreements with the County.

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-526.116, The application must state whether Alton Coal Resources, LLC. or Kane County will take charge of the County Road 136 re-alignment and subsequent reclamation. • Details of the public road 136 re-alignment must included as an appendix to the application and include the use of cattle guards and fencing in the design (requested during informal conference comment period) and describe measures for protection of the public during construction. •The reclamation plan narratives and maps must be revised to describe construction of the road in its approximate original alignment. [PB,WW]

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

Analysis:

The Applicant is required to obtain an Air Quality Approval Order prior to receiving a permit to mine. The first step in acquiring an Air Quality Approval Order is to file a Notice of Intent with the Utah Division of Air Quality (DAQ).

One comment received indicated that the Applicant had not filed a Notice of Intent with the Utah Division of Air Quality (DAQ). However, the Permit Application Package indicates that Alton Coal Development, LLC provided the DAQ with a Notice of Intent (NOI) on May 8, 2007 (Section 422 and Appendix 4-2). On July 2, 2008, Maung Maung of the DAQ confirmed that the NOI had been received in May 10, 2007, and review is pending.

Several comments were received during the public comment period and during the informal conference that the ambient and fugitive dust might degrade the characteristic clear skies of the area; that the fugitive dust might affect water quality of nearby streams and perhaps the groundwater; and that uncovered haul trucks might leave coal fines in their wake. These concerns should be addressed by the Applicant's fugitive dust control plan and the monitoring plan for evaluation of that fugitive dust control plan to control air pollution attendant to soil erosion (R645-301-244.100) and to prevent, minimize and control sediment contributions to streams (R645-301-526.220, *et seq*). However, the Division did not find that the Applicant's fugitive dust control monitoring plan provided enough specific detail to allow Division evaluation and enforcement of the dust control plan.

The application states in Section 521.168 (pg. 5-15) that there are "no specific air pollution collection or control facilities proposed." The Applicant's air pollution control plan is outlined in Section 423.100 – 200, as follows:

- seeding open stockpiles
- contemporaneous reclamation of mined out areas
- water sprays or chemical treatment on unpaved roads and operational areas.
- monitoring as described on pages 8 – 10 of the NOI prepared for the DAQ.

The Applicant refers to pages 8 – 10 of the NOI, Limitations and Test Procedures Items 9 - 17, (Appendix 4-2) for compliance with R645-301-423 (air pollution control plan), R645-301-423.100 (air quality monitoring program), and R645-301-423.200 (plan for fugitive dust control practices). This is unacceptable, because, the NOI does not require regular monitoring of all sources of visible emissions by the Applicant.

Items 9 and 10 of the NOI only specify that fugitive dust from traffic along haul roads is not to exceed 20% opacity as measured using Method 9. This monitoring is to be performed by the DAQ Executive Secretary's representative. The NOI does not specify how visible emissions from crushers, screens, conveyor transfer and drop points, diesel engines and all other points will be monitored.

Item 11 of the NOI specifies record keeping and calculation of production limits on a rolling 12-month period, not to exceed 2,000,000 tons/yr.

Item 12 of the NOI specifies record keeping for water sprays applied to haul roads when the temperature is above freezing. The NOI indicates the records will be made available to the

DAQ upon request. Items 13 and 15 of the NOI specifies length of haul road (not to exceed 7900 ft.); haul road speed limit not to exceed 15 mph; coal stockpile acreage not to exceed 3.35 acres; overburden storage piles not to exceed 60 acres. Item 14 of the NOI specifies that the open mining area shall not exceed limits established by the DOGM. This is not acceptable, because DOGM does not evaluate the size of the open pit in relation to fugitive dust and because without an indication of the size of the open pit area, the DAQ can not accurately calculate fugitive dust emissions. Therefore, the NOI should describe the dimension of the open pit areas.

Item 16 of the NOI describes the maximum sulfur content (0.5%) of the diesel fuel for all equipment. Item 17 requires maintenance and operation of equipment in compliance with R307-150 and R307-107 and describes that the DAQ Executive Secretary will determine whether acceptable practices are being used.

The NOI and the Air Quality Approval Order are tools used by the DAQ to promote compliance with the Clean Air Act. The terms of the NOI are monitored by the DAQ and enforced by the DAQ. Since the monitoring and evaluation requirements of R645-301-423 et seq, for surface mines producing greater than 1,000,000 tons/year will be enforced by the Division, the monitoring and evaluation plan must be clearly stated in the permit application, provided in the Annual Report, and available to the Division inspectors. The monitoring and evaluation plan should include provisions for controlling fugitive dust and coal fine deposition to control pollution attendant to erosion (R645-301-244.100) and to protect water quality (R645-301-526.221 and 526.222) from the open stockpiles, from the coal stockpile, from crushers, screens, conveyor transfer and drop points.

Findings:

The information provided in the application does not meet the requirements of the Air Quality rules. Prior to approval, please provide the following, in accordance with:

R645-301-423 ***et seq,*** The Applicant refers to pages 8 – 10 of the NOI, Limitations and Test Procedures, (Appendix 4-2) for compliance with R645-301-423, the air pollution control plan, and R645-301-423.100, the air quality monitoring program to evaluate the effectiveness of the fugitive dust control practices proposed and R645-301-423.200, the plan for fugitive dust control practices. This is unacceptable, because, the NOI does not require regular monitoring of visible emissions by the Applicant. The NOI and the Air Quality Approval Order are tools used by the DAQ to promote compliance with the Clean Air Act. The terms of the NOI are monitored by the DAQ and enforced by the DAQ. Since the monitoring and evaluation requirements of R645-301-423 et seq, for surface mines producing greater than 1,000,000 tons/year will be enforced by the Division, the monitoring and evaluation plan must be clearly stated in the permit application, with the results provided in the Annual Report, and available to the

Division inspectors. The monitoring and evaluation plan should include provisions for monitoring and controlling fugitive dust and coal fine deposition by the Applicant to control pollution attendant to erosion (R645-301-244.100) and to protect water quality (R645-301-526.221 and 526.222) from the open stockpiles of overburden, from coal stockpiles, from crushers, screens, conveyor transfer and drop points. The plan should indicate that the monitoring information and accompanying summary evaluation of emissions will be provided in the Annual Report, and be available to the Division inspectors upon request.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

The Applicant met the minimum requirements of this section. The Applicant outlined the procedure for coal recovery in Section 522 of the PAP. The Division reviewed the coal recovery plan and determined that the Applicant plans to use prudent engineering methods for maximizing coal recovery.

Findings:

The information provided in the application is considered adequate to meet the requirements of this section.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

The Applicant met the requirements of this section. The Applicant will not subside any areas within the permit boundary because they will not use underground mining methods.

Findings:

The information provided in the application is considered adequate to meet the requirements of this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

The Applicant met the requirements of this section. In Section 515.100 of the PAP, the Applicant described the procedures for contacting the Division in the event of a slide, which may have a potential adverse effect on public, property, health, safety or the environment.

In Section 515.200 of the PAP, the Applicant described the procedure for contacting the Division in the event that the Applicant's inspection of an impoundment they discover a potential hazard.

Findings:

The information provided in the application is considered adequate to meet the requirements of this section.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and Enhancement Plan

Procedures to minimize adverse impacts to fish and wildlife are included in Volume 2, Chapter 3. Section 333, pages 3-40 through 3-43 and appendices 3.1 and 3.3. Protection, The application needs to include a wildlife awareness program for the employees that includes avoidance, harassment, situations in transportation corridors, speed limits. Enhancement, There is a given assumption that wildlife species will be displaced during the active phase of mining operations. In the case of surface mining, ongoing reclamation measures are intended to offset the displacement or restore the habitat as an enhancement measure beneficial to certain wildlife populations. The applicant needs to include a narrative that describes how impacts to the habitat for the high value wildlife species, black bear, rocky mountain elk, and mule deer will be mitigated or enhanced during the active phase of mining operations. The applicant could describe the beneficial uses to the referenced species that have been achieved to date by the removal of the Pinyon Juniper. A comparison of acreages should be included, disturbed area footprint versus habitat enhancement, in the application.

The main focus of the current application for protection and enhancement is the Greater Sage Grouse, listed as a sensitive species by the DWR heritage group and a candidate species bt the USFWS. Appendix 3- "Alton Sage-Grouse Habitat Assessment and Mitigation Plan" and Appendix 3-3, "Sage-Grouse Distribution and habitat improvement Alton, Utah are the main documents included in this section of the regulations.

Alton Sage-Grouse Habitat Assessment and Mitigation Plan

The data obtained from comparing the leks and roost sites indicates that there are sites with enough similarity that could be used for breeding and roosting areas. The applicant needs to include a methodology for relocating the birds to these alternative sites.

Page 20, paragraph 1, The applicant needs to describe how the "Conservation Area will be enhanced for Sage-Grouse especially during the breeding season".

Page 20, paragraph 3, "Intact sagebrush sites will be cleared of all young Juniper trees", these areas need to be identified. The applicant may consider adding information to drawing 3-1.

Page 20, paragraph 3, "Juniper woodlands surrounding intact stands can be cut back to increase patch size and the amount of area that has potential for nest site selection by hens", there areas need to be identified on a vegetation map and quantified in terms of acreages if that is what the applicant intends to do.

Page 21, paragraph 3, "Long term mine plans will remove hundreds of acres of juniper woodlands". The applicant needs to perhaps quantify this statement. How many acres per year will be removed for the development of Sage-Grouse habitat? Areas need to be listed in the application and delineated on a vegetation map.

Page 22, paragraph 3, "The Alton Sage-Grouse population will be enhanced by importing birds from nearby populations that are relatively large and stable, the applicant needs to include a time table, number of birds and appropriate clearances from DWR, USFWS, BLM

Page 22paragraph 3and page 22paragraph 1, The applicant needs to support this proposed population enhancement by differentiating the populations and providing a time table for capturing and relocating the birds as noted in the previous comment.

Page 23, paragraph 3, the applicant needs to describe the mechanical treatment for controlling invasive species.

Sage-Grouse Distribution and habitat improvement Alton, Utah

This document includes a mitigation plan to improve sage-grouse habitat, increase bird population levels and maintain optimal habitat for nesting, brood rearing and summer and winter use. Issues discussed include:

- Sage-grouse population and distribution monitoring,
- Results of the 2007 sage-grouse trapping and blood sampling efforts,
- Attempts to lure birds from lek to lek,
- Mitigation implementation strategies,
- Lek search and aerial habitat assessment and,
- Proposed habitat and predator control mitigation.

Page 9, Brood Rearing habitat improvement, the Division is requesting the applicant to provide an update on the status of the development of the alfalfa field.

Page 9, Brood Rearing habitat improvement paragraph 2, has the research on plant insect relationships been completed?

Page 9, Predator control paragraph 3, the applicant needs to provide an update on the status of predator control arrangements.

Page 10, Habitat connectivity, the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. . What is the projected time frame for providing a corridor that would connect the two populations.

Endangered and Threatened Species

Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. As noted in Section 322.210 A narrative for each species describing the rationale for their absence and surveys conducted to verify such needs to be included in the application. Example MSO protocol and survey results. Threatened and Endangered Plant species are generally described in Appendix 3-4 page 5.

Colorado Fish Recovery Program

The application needs to include mine water consumption calculations in acre feet per year for the four endangered fish species included in the recovery program.

Bald and Golden Eagles

The applicant needs to address this section of the regulations. This section typically includes a narrative about each species including their status within ½ mile of the proposed disturbed area.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

Wetland areas are described on page 3-73 of the application and chapter 7. According to the application there are wetland areas in the permit area. Page 3-73 refers the reviewer to page 3-40 of the application for protection measures for these areas. The information on page 3-40 does not describe protection and enhancement measures for the wetland areas.

Findings:

R645-301-333, The data obtained from comparing the leks and roost sites indicates that there are sites with enough similarity that could be used for breeding and roosting areas. The applicant needs to include a methodology for relocating the birds to these alternative sites in the Alton Sage-Grouse Habitat Assessment and Mitigation Plan. • Page 20, paragraph 1, The applicant needs to describe how the "Conservation Area will be enhanced for Sage-Grouse especially during the breeding season." • Page 20, paragraph 3, "Intact sagebrush sites will be cleared of all young Juniper trees", these areas need to be identified. •Page 20, paragraph 3, "Juniper woodlands surrounding intact stands can be cut back to increase patch size and the amount of area that has potential for nest site selection by hens," there areas need to be identified on a vegetation map and quantified in terms of acreages. • Page 21, paragraph 3, "Long term mine plans will remove hundreds of acres of juniper woodlands". The applicant needs to perhaps quantify this statement. How many acres per year will be removed for the development of Sage-Grouse habitat? Areas need to be listed in the application and delineated on a vegetation map. [JH]

R645-301-342, Page 23, paragraph 3, the applicant needs to describe the mechanical treatment for controlling invasive species. • Page 10, Habitat connectivity, the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. • What is the projected time frame for providing a corridor that would connect the two populations. Endangered and Threatened Species • Page 9, Predator control paragraph 3, the applicant needs to provide an update on the status of predator control arrangements. [JH]

R645-301-358, Page 22, paragraph 3, "The Alton Sage-Grouse population will be enhanced by importing birds from nearby populations that are relatively large and stable, the applicant needs to include a time table, number of birds and appropriate clearances from DWR, USFWS, BLM. • Page 22paragraph 3and page 22paragraph 1, The applicant needs to support this proposed population enhancement by differentiating the populations and providing a time table for capturing and relocating the birds as noted in the previous comment. • Page 9, Brood Rearing habitat improvement, the Division is requesting the applicant to provide an update on the status of the development of the alfalfa field in the Sage-Grouse Distribution and habitat improvement Alton, Utah. • Page 9, Brood Rearing habitat improvement paragraph 2, has the research on plant insect relationships been completed? • Page 9, Predator control paragraph 3, the applicant needs to provide an update on the status of predator control arrangements. • Page 10, Habitat connectivity, the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. • What is the projected time frame for providing a corridor that would connect the two populations. • The application needs to include mine water consumption calculations in acre-feet per year for the four endangered fish species included in the recovery program. • The applicant needs to provide information on Bald and Golden Eagles. i.e. narrative about each species including their status within ½ mile of the proposed disturbed area. •The information on page 3-40 needs to include protection and enhancement measures for the wetland areas.•The applicant needs to include a narrative that describes how impacts to the habitat for the high value wildlife species, black bear, rocky mountain elk, and mule deer will be mitigated or enhanced during the active phase of mining operations. The applicant could describe the beneficial uses to the referenced species that have been achieved to date by the removal of the Pinyon Juniper. A comparison of acreages should be included, disturbed area footprint versus habitat enhancement, in the application. • The application needs to include vegetation and fish and wildlife information pertaining to the road realignment for the permit and adjacent areas. [JH]

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Mine pits and mining sequence are described in Section 523. Overburden removal is shown on Dwg 5-16. Operational sequence and contemporaneous reclamation sequence is shown on Dwg 5-17 through 5-19.

The topsoil salvage operation is described in Section 231.100 through Section 233.100-400 and in Section Four of Appendix 2-1. Table 4-2 of Section Four in Appendix 2-1 provides the average topsoil salvage depth and the subsoil salvage depth by map unit. The topsoil salvage depth ranges from 5 to 10 inches. Subsoil suitability varies due to high pH, clay content, and carbonate accumulations. The suitable subsoil salvage depth ranges from 1 to 55 inches. Due to this wide variation in suitability of subsoil the application states that topsoil and subsoil salvage will be monitored by a certified soil professional (Section 231.100 and Appendix 2-1, pg. 4-2). Page 4-1 of Appendix 2-1 suggests that poor soil is indicated by pH greater than 8.5, EC less than 4.0, and SAR less than 4. These latter two criteria (EC, SAR) do not reflect the criteria for poor soil described in Table 4-1, which does reflect the UDOGM soil suitability criteria. Please correct the narrative accordingly, so that the basis for subsoil suitability and salvage is clear.

Dwg. 2-2 indicates salvage and stockpiling from less than half of the permit area, with the rest of the topsoil being live-hauled to contemporaneous reclamation sites. Table 4-5 provides the expected topsoil and subsoil recovery by year and acreage disturbed. Tables 4-3.1, 4-3.2, 4-3.3 provide similar information by map unit and acreage. Table 4-4 provides topsoil and subsoil salvage for facilities construction. According to plan (Section 232.500), topsoil and subsoil from year one facilities construction areas will be stockpiled as shown on Drawing 2-2.

Three topsoil stockpiles and a subsoil pile will be located as shown on Drawing 2-2. Dwg. 2-2 describes the average depth and footprint area for each stockpile. From the information on Dwg 2-2, the combined volume of topsoil stored in stockpiles is 302,000 cu yds, of which 188,000 cu yds is topsoil. Stockpiled soil will be placed such that side slopes will not exceed 3h:1v and the piles will be bermed. The piles will be seeded with an interim mix. The Applicant must describe the interim seed mix by species and planting rates. (Final seed mixes are provided in Tables 3-37 through 3-42 for the plant communities, but an interim mix could not be located.)

Findings:

The information provided in the application does not meet the requirements of the R645 Coal Rules for Soils Handling Operation Plan. Prior to approval, please provide the following, in accordance with:

R645-301-231.100, Page 4-1 of Appendix 2-1 suggests that poor soil is indicated by pH greater than 8.5, EC less than 4.0, and SAR less than 4. These latter two criteria (EC, SAR) do not reflect the criteria for poor soil described in Table 4-1, which

does reflect the UDOGM soil suitability criteria. Please correct the narrative accordingly, so that the basis for subsoil suitability and salvage is clear. [PB]

R645-301-234.230, The Applicant must describe the stockpile interim seed mix by species and planting rates. [PB]

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Vegetation communities are described in Volume 2, Chapter three of the application. The descriptions include acreage, percent of total by community, total living cover, percent cover by shrubs, grasses, forbs and woody plant species, for;

- The proposed Disturbed Sagebrush/Grass Community
- The Sagebrush/Grass Reference Area
- The Proposed Disturbed Meadow (Dry) Community
- The Meadow (Dry) Reference Area
- The Proposed Disturbed Pinyon-Juniper Community
- The Pinyon-Juniper Reference Area
- The Proposed Disturbed Pasture Land Community
- The Pasture Land Reference Area
- The Proposed Disturbed Oak brush Community
- The Oak Brush Reference Area
- The Proposed Disturbed Meadow Community
- The Meadow Reference Area
- Other Meadow Communities

Tables 3-1 through 3-33 include living cover and frequency by plant species, total cover and composition and woody species density. Table 3-34 includes "Biomass Production of Plant Communities in the Coal Hollow Permit Area". These figures are represented in pounds per acre for each community.

Appendices 3-2 and 3-4 include the methodologies, (maps, sampling design and transect/quadrat placement, cover and composition, woody species density, sample size and adequacy, statistical analyses, photographs and threatened and endangered plant species), results, summary and discussion and color photographs for the referenced communities.

On page 15, Threatened & Endangered Plant Species Survey, the applicant needs to include a description of the T&E plant species survey, and a narrative that describes the species,

location, elevation, soil type, moisture requirements, and the presence or absence of each species. Threatened and Endangered Plant species are described in Appendix 3-4 page 5. This deficiency was noted in the environmental resource and fish and wildlife information sections.

Findings:

The information is not adequate to meet the requirements of this section of the regulations. See deficiencies written under R645-301-322 in the fish and wildlife resource information section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

The Applicant did not meet the requirements of this section. The Applicant stated that all roads within the permit would be ancillary except for two haul roads.

A primary road is defined as a road upon which coal or spoil is hauled or used frequently for a period in excess of six months. An ancillary road is defined as all other roads. The Division will not grant blanket approval classifying all new roads as ancillary.

Plans and Drawings

The Applicant did not meet the requirements of this section. The Applicant did not include information about the relocation of County Road 136.

The Applicant is required to include plans and drawings for each road that contain the following:

- A map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures. The Applicant shows the basic designs for the primary roads in Section 527.170 and on Drawing 22 and Drawing 23. The Applicant provided the information listed above. For clarity each roads must have it own identification name or number.
- Drawings and specifications of each proposed road that is located in the channel of an intermittent or perennial stream. The Applicant gave the designs for the stream crossings in Section 527.170 and on Drawing 22 and Drawing 23.

- Drawings and specifications for each proposed ford of perennial or intermittent streams that are used as a temporary route. The Applicant does not propose to have temporary routes thru perennial or intermittent streams.
- Measures to be taken to obtain approval of the Division for alteration or relocation of a natural stream channel. In Section 527.220 of the PAP, the Applicant states that there will be no stream diversions for road construction. The Applicant then goes on to state that a permanent diversion will occur in Lower Robinson Creek, consistent with information presented on Drawing 22. The Applicant should modify the comment in Section 527.200 of the PAP to acknowledge that were will be a permanent diversion in Lower Robinson Creek to allow for maximum economic recovery, but not to facilitate road construction.
- Drawings and specifications for each low-water crossing of perennial or intermittent stream channels. In Section 534.100-200 of the PAP, the Applicant states that they will not do such activities.

In addition to the above, the Applicant will provide primary roads shall meet the following requirements for primary roads:

- A qualified registered professional engineer shall certify the construction or reconstruction of primary roads in a report to the Division. The certified designs are on Drawing 22 and Drawing 23.
- Each primary road embankment shall have a minimum static factor of 1.3. The Applicant states in Section 534.100-200, that all embankments have been designed with a 1.3 static safety factor.
- Primary roads shall be located to minimize erosion, insofar as is practicable, on the most stable available surface. In Section 534.100-200, the Applicant states the design plans. The Applicant complied with the general rules that are designed to help insure the above mentioned requirements are meet.
- Fords of perennial or intermittent streams by primary roads are prohibited unless the Division specifically approves them. The Applicant does not plan to use fords in any stream.
- Each primary road shall be constructed or reconstructed, and maintained to have adequate drainage control. The Division considers that those general requirements have been met if the hydrology requirements have been met.
- Primary roads shall be surfaced with material approved by the Division as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road. The Applicant was not consistent with the description of the road surface. In Section 534.100-200, the Applicant stated that eighteen inches of crushed rock or gravel would be used for road surfacing. On Drawing 23, the Applicant does not list eighteen inches of road surface and states that gravel will be placed as needed.

The Division received several comments about truck travel through Panguitch. Some people would prefer that the truck traffic be routed around the town either by having the Applicant use alternative routes or by have a bypass road constructed. The Division does not regulate truck travel on public roads. The Division will forward the comments onto the Department of Transportation.

The Division received comments about commitments that the Applicant allegedly made about constructing a bypass road around Alton. The Applicant did not include that information in the submittal. The Division does regulate truck traffic on public roads including those through Alton. The Applicant did not indicate that any new roads will be constructed in this application, which the exception of the road realignment.

The Division received comments about coal being blown off the trucks as they travel on public roads. Truck traffic on public roads is regulated by the Department of Transportation. The Department of Transportation is responsible for ensuring that all truckloads are properly covered.

Performance Standards

The Applicant meet the requirements of this section. All roads road shall be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to:

- Control or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces. In Section 534.100-200 and 534-300-340, the Applicant discusses those requirements.
- Control or prevent damage to fish, wildlife, or other habitat and related environmental values. The Division considers that the general requirements are met if the biology requirements have been met.
- Control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area. The Division considers that those requirements have been met if the hydrology requirements have been met.
- Neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standard applicable to receiving waters. The Division considers that those requirements have been met if the hydrology requirements have been met.
- Refrain from seriously altering the normal flow of water in streambeds or drainage channels. The Division considers that those requirements have been met if the hydrology requirements have been met.
- Not locate any road in the channel of an intermittent or perennial stream unless specifically approved by the Division. In Section 534.100-200 and 534-300-340, the Applicant states that roads will not be located in stream channels.
- Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park

System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress. The Division considers that those requirements are met if the hydrology and biology requirements have been met.

- Use nonacid- and nontoxic-forming substances in road surfacing. In Section 534.100-200, the Applicant committed to that requirement.
- Maintain all roads to meet the performance standards of this part and any additional criteria specified by the Division. In Section 534.340 and Section 527.230, the Applicant committed to that requirement.
- A road damaged by a catastrophic event, such as a flood or earthquake, shall be repaired as soon as is practicable after the damage has occurred. The Applicant address that requirement in Section 527.230.

Primary Road Certification

The plans and drawings for each primary road have been prepared by, or under the direction of, and certified by a qualified registered professional engineer. A registered professional engineer certified Drawings 22 and 23.

Other Transportation Facilities

The plan must include a detailed description of each road, conveyor, and rail system to be constructed, used, or maintained within the proposed permit area. The description will include a map, appropriate cross sections, and the following: specifications for each road width, road gradient, road surface, road cut, fill embankment, culvert, bridge, drainage ditch, and drainage structure; measures to be taken to obtain Division approval for alteration or relocation of a natural drainageway; a maintenance plan describing how roads will be maintained throughout their life to meet the design standards throughout their use; a commitment that if a road is damaged by a catastrophic event, such as a flood or earthquake, the road will be repaired as soon as practical after the damage has occurred; a report of appropriate geotechnical analysis, where approval of the Division is required for alternative specifications, or for steep cut slopes.

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-121.200, The Applicant was not consistent with the description of the road surface. In Section 534.100-200, the Applicant stated that eighteen inches of

crushed rock or gravel would be used for road surfacing. On Drawing 23, the Applicant does not list eighteen inches of road surface and states that gravel will be placed as needed. [WW]

R645-301-527.100, The Applicant must state specifically which roads will be classified as primary roads and which roads will be classified as ancillary. The Division will not accept a blanket statement that all future roads will be ancillary. In addition, some roads that are not used to haul coal or spoil might be primary roads. In addition, the Applicant must also classify the road that connects the site with Kane County Road 136. [WW]

R645-301-527.220, The Applicant should modify the comment in Section 527.200 of the PAP that "As currently planned, no natural drainage ways will be altered or relocated due to road construction," to acknowledge that were will be a permanent diversion in Lower Robinson Creek to allow for maximum economic recovery, but not to facilitate road construction. [WW]

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

The Applicant met the requirements of this section. The Applicant outlined how they would comply with these regulations in Section 528.330 through Section 528.334.

Coal Mine Waste

The Applicant met the requirements of this section. The Applicant stated in Section 528.320 "Not Applicable". The Applicant does not anticipate that coal mine waste will be produced at the site. Coal mine was is defined in R645-100 as coal processing waste and underground development waste. The Applicant does not anticipate underground development waste because only surface mining will be done and no coal processing (other than crushing and screening) will occur on the site.

Refuse Piles

The Applicant met the requirements of this section. The Applicant stated in several area of the PAP, including Section 528.320 that no refuse pile would be needed.

Impounding Structures

The Applicant will not construct impounding structures of coal mine waste.

Burning And Burned Waste Utilization

The Applicant met the requirements of this section. The Applicant will not have coal mine waste at the site. See Section 528.320

Return of Coal Processing Waste to Abandoned Underground Workings

There are no underground workings at the site.

Excess Spoil:

The Applicant did not meet the requirements of this section. The Applicant described how the excess spoil would be handled in several sections of the PAP, including, 526, 528, 535, and 536.

The pre-topographic maps and the reclamation maps show that the Applicant located the spoil pile in naturally stable areas. Drawing 5-3 and 5-35 show the areas where excess spoil will be placed. Drawings 5-35 and 5-36 show the design of the fill. Appendix 5-1 is a geotechnical analysis of the sediment impoundments and excess spoil structure prepared by Taylor Geo-Engineering, LLC. The Applicant does not plan on disposing of coal mine waste in the excess spoil pile (521.143).

The excess spoil pile is designed to minimize effects on surface and ground water due to leaching and surface water runoff: design details are in Section 535 (745.100). A spring and seep survey identified no springs or wet weather seeps in the proposed excess spoil area. The location for the excess spoil pile encompasses an area of dry meadow west of County Rd. 136 (shown on Plate 3-1). This area is identified potentially sub-irrigated (App. 7-7 (pg. 10). The soil in dry meadow area is map unit 6 (Graystone-Cookcan-Jonale Family complex, 1 – 5% slopes) which is described in Chap. 2, page 13 as medium to coarse textured soil with wet conditions. No underdrains are planned for the excess spoil structure. The final surface of the excess spoil pile will be regraded to a contour that will route water from snowmelt and rainfall around the excess spoil (Drawing 5-35). No manmade water courses are present in the excess spoil area (745.100).

In Section 528.310 and 535.100, the Applicant states that spoil will be placed in lifts, not to exceed four feet in thickness, and meet a 90% compaction based on the standard Procter tests. The Applicant needs to provide the Division with the specifications of the equipment that will be used to achieve compaction. The Division is unaware of any equipment that can compact lifts up to four feet thick and achieve a 90% Proctor. The Applicant stated that the slopes would have a minimum static safety factor of 1.5 (Appendix 5-1). A registered professional engineer certified the plans.

In Section 535.100-150, the Applicant commits to place excess spoil in horizontal lifts not exceeding 4 feet in thickness; concurrently compact as necessary to ensure mass stability and to prevent mass movement during and after construction; grade so that surface and subsurface drainage is compatible with the natural surroundings; and cover with topsoil or substitute material.

The application states in Section 542.100 that mined areas will be backfilled and graded within 180 days following coal removal or within 1,500 feet of the active coal removal face. One exception is discussed under backfilling and grading section of the reclamation plan.

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-535.140, In Section 528.310 and 535.100, the Applicant states that spoil will be placed in lifts not to exceed four feet in thickness and meet a 90% compaction based on the standard Procter tests. The Applicant needs to provide the Division with the specifications of the equipment that will be doing the compaction. The Division is unaware of any equipment that can compact lifts up to four feet thick and achieve a 90% Proctor. [WW]

R645-301-553 and 542.200, The Applicant will describe how and where the overburden will be placed for the initial box cut. • The Applicant must have a specific timetable for completing rough backfilling and grading in the PAP. • The Applicant must provide surveys of coal recovery at the end of each calendar month and show coal recovery on a plan view of the mining area at the end of each calendar month. • The Applicant must provide detailed descriptions of how overburden will be placed and provide documentation of placed backfill volumes, on a monthly basis. • The Applicant must provided rough backfill volumes taken from the survey of contemporaneous cross sections showing toe of backfilled slope on latitudinal and longitudinal basis in relationship to the coal seam being

mined. • The Applicant must establish and follow a ground control plan for the safe control of all highwalls, pits and spoil banks, as approved by MSHA under 30 CRF77.1000 and the MSHA approved plan will be included as part of the mining and reclamation plan. [WW]

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

Groundwater interception along the eastern edge of the proposed mine permit could have a substantial influence on the function of the ground water system in Sink Valley. Potentiometric surface levels in Drawing 7-13, the groundwater cross-sections associated with Figure 6-a in the Peterson Report as well as Figure 16, cross-sections in Figures 6, 7 and 8, the flow pattern in Sink Valley Wash shown in Figure 21, the alluvial groundwater discharge area in Figure 16, and the drawdown and recovery data shown in Figures 17 and 18, all paint a picture of the groundwater resources on and adjacent to the minesite.

The Applicant commits to replace the water supply of an owner of interest in real property who obtains all or part of their supply of water for domestic, agricultural, industrial, or other legitimate use from the underground or surface source, where the water supply has been adversely impacted by contamination, diminution, or interruption proximately resulting from the surface mining activities. Baseline hydrologic information required in R645-301-624.1 00 through R645-30 1-624.200, R645301- 625, R645-301-626, R645-301-723 through R645-301-724.300, R645-301-724.500, R645-301-725 through R645-301-731, and R645-301-731.210 through R645-301731.223 will be used to determine the extent of the impact of mining upon ground water and surface water (Section 731.800).

The eastern edge of the pits will intercept alluvial aquifers that support numerous springs, wells, and subirrigated lands. Most of the groundwater activity lies east of the fault the lies on the east side for the mine permit area. The fault is not the controlling factor in groundwater movement. It is only linked to groundwater conditions in as much as it offsets the strata some 10 to 30 feet higher on the east than the west. The offset in combination with the regional dip of the strata create a the trough of Sink Valley.

There is probably going to be drainage from these alluvial aquifers into the pits. When mining is done in each pit, it is to be filled and reclaimed. Porous fill material must not be left

adjacent to the alluvial aquifers as that would facilitate continuous drainage from the aquifers into the fill in the pits. The applicant must provide a design for the margin, where the pits meet the undisturbed alluvium. Specific techniques to be used to minimize drainage from the alluvium into the fill must be described. A grout curtain or geo-membrane may possibly block ground-water flow across this boundary, but other methods to achieve this purpose may be devised.

Groundwater Monitoring

The applicant plans to continue monitoring springs and wells throughout the mining and reclamation operation mining operations. Drawing 7-1 shows locations for seeps and springs. Tables 7-7a and 7-7b identify the water quality parameters the applicant has proposed to monitor for groundwater operational and baseline conditions.

The operator proposes to monitor springs SP-6, SP-8 and SP-33 for discharge and water quality during operations. This proposal is insufficient because there are other springs that emit flows that are measurable, accessible and representative, and which will provide back up information in the event the springs SP-6, SP-8 or SP-33 are intercepted by mining. Therefore, the Division will require that springs SP-4, SP-6, SP-8, SP-14, SP-20 and SP-33 be monitored for discharge and water quality during operational and reclamation activities. Springs SP-14, SP-16, SP-19, SP-22 and SP-24 should be monitored for discharge and field parameters, as recommended by the applicant.

The text identifies several other springs (SP-14, SP-16, SP-19, SP-20, SP-22, SP-24 and Sorensen Spring) will be monitored for field parameters, which do not appear on the baseline monitoring map, Dwg 7-2. SP-15, SP-17, Sp-18, SP-21, SP-23, SP-25, SP-26, SP-27, SP-28, SP-29, SP-30, SP-31, SP-34, SP-35, SP-36 and SP-37 are identified as monitoring springs in Table 7-1, but are not shown on Dwg 7-2 or discussed in the text. Spring 23 is listed in Table 7-5 as a monitoring site, where field and quality parameters should be collected. The Applicant should insure all tables and text correlate to each other. The tables at the end of Section 7 are the same as a set of tables in Appendix 7, Petersen Hydrologic, LLC report. The drawings in the Petersen Report show different water monitoring locations than the drawings in the text. The applicant should make sure all groundwater monitoring sites are located on the groundwater monitoring map and their protocols are represented on the map and legend. The text, maps (including legend) and tables, all need to be consistent and correlate with each other.

The applicant identifies a monitoring plan for wells in Section 731.200. Wells Y-61, LS-85, SS-30, UR-70 andLR-45 will be monitored quarterly for groundwater operational laboratory water quality parameters, which is Table 7-7A. Wells Y-98, Y-45, Y-102, Y-36, Y-38, C5-130, C2-15, C2-28, C2-40, C3-15, C3-30, C3-40, C4-50, C7-20, C9-25, C9-40, LS-28, LS-60, LS-85, SS-15, SS-30, SS-75 CO-18 and CO-54 will be monitored quarterly for water level. Of these

springs Y-98, Y-99, Y-102, Y-36, Y-61, Y-59, Y-45, Y-38 and Y-63 are identified on the monitoring map, Drawing 7-2. Drawing 7-11 shows the typical design of a monitoring well.

Surface Water Monitoring

Drawing 7-1 shows locations for streams in and adjacent to the proposed permit and adjacent area; Drawing 7-7 shows locations for a number of small ponds created to impound runoff and spring discharge for stockwatering and irrigation, and conveyance ditches. The drawing base for both drawings, the Alton USGS Topographic Quad, shows numerous small ponds that generally coincide with the ponds marked by the Applicant on Drawing 7-7, although the Applicant has identified ponds that are not shown on the basemap. Section 722.200 states there are no significant natural ponds or lakes.

The surface water monitoring plan is summarized in Tables 7-4 through 7-7b.

The Division received a comment that the water monitoring plan was not complete because baseline information was not complete. As has already been discussed, there are some deficiencies in the baseline data that need to be rectified, but on the whole the baseline data provide sufficient understanding of the hydrology of the proposed permit and adjacent area to prepare a surface-water monitoring plan.

Acid- and Toxic-Forming Materials and Underground Development Waste

Appendix 6-2 contains information on the acid- and toxic-forming potential of earth materials naturally present in the proposed permit and adjacent areas. Appendix 6-1 (confidential binder) has information on the Smirl Coal Seam proposed for mining.

The Division received a comment that there were no analyses identifying strata that might contain acid- and toxic forming materials from the Dakota Formation (R645-301-624.220). The data referred to in the preceding paragraph meet this requirement.

Only the alluvial surface 30 feet of overburden is being considered for surface placement, according to Section 232.720. Section C Appendix 2-1 show all surface soil analysis of hot water soluble selenium below limits of detection, 0.02 mg/kg. Appendix 6-2 shows selenium content of less than 0.10 mg/kg in the overburden cores using method SW6020 for water soluble selenium, with the exception of the zone below the coal and below 35 feet in the vicinity of CH-06-05, where insufficient sample provides no information on selenium levels and/or high levels of selenium in the lower zones of overburden require special handling. A deficiency was written to request information describing how the selenium in the zone below the coal would be isolated from groundwater in final reclamation.

Section 731 describes the measures to be taken to protect the surface and ground water from wash water, chemicals, fuels, and oils and from sediment load. However, the plan suggests in Section 358.530 that there may be ponds containing hazardous concentrations of acid/toxic forming mateials. Please provide further description of the characteristics of the hazard. I.e. Does the applicant expect run off from the Tropic Shale to form saline/sodic ponded water?

Transfer of Wells

The Applicant commits in Sections 738, 748, 755, and 765 that, when no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under the Coal Mining Rules, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with the Coal Mining Rules.

Discharges Into An Underground Mine

There are no underground mines in the area.

Gravity Discharges From Underground Mines

There are no underground mines in the area.

Water-Quality Standards And Effluent Limitations

The Applicant has committed to apply for a UPDES permit (Section 728.332) to discharge from the mine pit, to either Lower Robinson Creek or Sink Valley Wash, which are both tributary to Kanab Creek. Supplemental containment and sedimentation ponds will be built if needed to meet effluent discharge standards (Section 724.500).

Diversions: General

Drawing 5-3 shows the proposed locations for the sedimentation ponsda, ditches, and other sediment control measures. Drawing 5-25 shows the location of. Drawing 5-27 shows the drainages reporting to the sediment control diversion ditches. Details of sediment control diversion ditch construction are on Drawings 5-33 and 5-34.

Diversions: Perennial and Intermittent Streams

Drawings 5-20 and 5-21 show plans for the Robinson Creek diversion. This is planned to be a permanent diversion. See previous comments on the inappropriateness of this as a permanent diversion

Diversions: Miscellaneous Flows

Diversion of miscellaneous flows is planned using four diversion ditches. Two will be primarily used to route runoff from upland, undisturbed areas away from the planned disturbed areas, and the other two are planned to direct runoff from disturbed areas into sediment impoundments. Drawings 5-27, 5-33 and 5-34 show the locations of these diversions, along with the associated watersheds. Appendix 7-2 contains the calculations related to these diversions.

Stream Buffer Zones

The application commits that any perennial or intermittent streams in the mine area will be protected by 100-foot stream buffer zones on either side. Areas surrounding the streams that are not to be disturbed will be designated as buffer zones, and will be marked as specified in R645-301-521.260.

In order to allow any proposed operations inside a stream buffer zone, the Division will need to make a finding that coal mining and reclamation operations will not cause or contribute to the violation of applicable Utah or federal water standards and will not adversely affect the water quality and quantity or other environmental resources of the stream: the Division has not made such a determination at this time. As currently proposed, the plan calls for the permanent diversion of a reach of the Lower Robinson Creek stream channel, approximately 2,000 feet in length, in the southeast 1/4 of Section 19, T. 39 S., R. 5 W. Details of the proposed diversion are given in Chapter 5, Section 527.220 of this MRP. The Division does not see the need or purpose to make such an unnatural and unstable relocation of this channel permanent: see previous coments

Sediment Control Measures

The applicant states that sediment control measures have been designed, constructed and maintained to prevent additional contributions of sediment to stream flow or to runoff outside the permit area (Section 732). The Applicant proposes four diversion ditches and four sediment impoundments for the proposed permit area. Specific areas will be treated by additional miscellaneous controls such as silt fence and berms. The proposed locations for these structures are shown on Drawing 5-3. Details associated with these structures can be viewed on Drawings 5-25 through 5-34 and Appendix 5-2.

The Applicant proposes cut ditches on the shoulders of all primary roads to control drainage and erosion. Cut and fill slopes along the primary roads will be minimal and are not expected to cause significant erosion. In locations where there are culvert crossings (i.e. Lower Robinson Creek), the fill slopes will be stabilized by utilizing standard methods such as grass matting or straw wattles. The location and details for roads can be viewed on Drawings 5-3 and 5-22 through 5-24.

Sediment control measures are to be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-760 in the application.

Siltation structures and diversions will be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-763 (Section 731).

Storm water and snow melt within the facilities area is to be routed to a sedimentation pond. This pond is to have a drop-pipe spillway installed to allow removal of oil sheens by using absorbent materials. Drawing 5-28 shows the details for this impoundment (Section 731).

Siltation Structures: General

Siltation Structures: Sedimentation Ponds

Drawing 5-3 shows the planned location of each sedimentation pond. Particulate matter will be allowed to settle prior to the discharging of the water to the receiving water, controlling suspended solids concentrations (728.322). Appendix 5-2 contains sizing calculations for the sedimentation ponds; Appendix 5-3 contains sizing calculations for culverts, and both Appendices 5-2 and 5-3 include sizing data for diversions. Sediment control facilities will be designed and constructed to be geotechnically stable (728.333).

Drawing 5-25 shows the location of sedimentation ponds, and Drawing 5-26 shows the drainages reporting to the sedimentation ponds. Drawings 5-28 to 5-31 show designs for construction of the sedimentation ponds. Drawings 5-32 shows design details for the spillways.

The planned sedimentation ponds small enough that they do not need to meet the requirements of MSHA, 30 CFR 77.216(a). The applicant commits that should any impoundments and sedimentation ponds that meet the size or other qualifying criteria of MSHA, 30 CFR 77.216(a) be built, the ponds will meet those criteria.

Siltation Structures: Other Treatment Facilities

No other treatment facilities are planned for the Coal Hollow Mine.

Siltation Structures: Exemptions

No exemptions are requested for the Coal Hollow Mine.

Discharge Structures

Each impoundment will be constructed with a spillway that will function as both the emergency and principle spillway. Each of these spillways will safely discharge a 25-year, 6-hour precipitation event. Impoundments 1 and 2 will be constructed with a drop-pipe spillway system. Impoundments 3 and 4 will be constructed with open channel spillways designed to discharge a 24-hour duration, 100-year storm

event. They will be vegetated to minimize erosion. Drawing 5-28 through 5-32 provides the details for these structures.

Impoundments

The Applicant met the following requirements for the sedimentation ponds which are the only planned impoundments :

- The Applicant will not construct any impoundment meeting the MSHA size or other criteria of 30 CFR Sec. 77.216(a) (Section 743.110).
- The Applicant had the designs for the four impoundment certified by a registered professional engineer. See Drawing 5-28 though Drawing 5-32. The Applicant provides slope stability analysis for the four sediment ponds. See Appendix 5-1.
- The Applicant discusses the freeboard designs in Section 743.120 of the PAP.
- The Applicant described the preparation of the impoundments' foundations in Section 533.200 of the PAP.
- The Applicant discussed how the impoundments' slopes would be vegetated and riprapped to protect against erosion.
- The Applicant states in Section 514.300 that a professional engineer or specialist experienced in the construction of impoundments will inspect impoundments during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond; and will provide the Division certified reports on the construction and maintenance. A copy of the reports will be retained at or near the mine site.
- The Applicant commits in Section 515.200 that any potential hazards identified by inspections will promptly be reported to DOGM, along with emergency procedures for public protection and remedial action.

The Applicant does not contemplate construction of any permanent water impoundments; coal processing waste banks and coal processing waste dams or embankments (521.125). The Applicant does not contemplate construction of any impoundments meeting the RCS Class B or C criteria for dams in TR-60, or the size or other criteria of 30 CFR Sec. 77.216. 521.125.

The Applicant did not discuss rapid drawdown.

Ponds, Impoundments, Banks, Dams, and Embankments

The Applicant met the minimum requirements of this sub-section. Section 733 states that a professional engineer experienced in the design and construction of impoundments, with assistance from a geotechnical expert, has used current, prudent engineering practices to design the proposed impoundments. The plans have been certified and a detailed geotechnical analysis has been provided in Appendix 5-1. The certifications, drawings and cross sections can be viewed in Drawings 5-25 through 5-31 and Appendices 5-1 and 5-2. The 3-foot freeboard

designed for the impoundments should be sufficient to prevent overtopping from waves and storm events. Section 743 states that these impoundments do not meet the criteria for Class B or C dams or MSHA CFR 77.216 (a).

Findings:

The information provided does not meet the hydrology operations requirements. Prior to approval, please provide the following in accordance with:

R645-301-533.300, The Applicant must state how the impoundments will be protected from rapid drawdown that can occur in earth dams when reductions in the water level produce dangerous changes in pore water pressure. This occurs because the water in the soil tends to flow back into the reservoir through the upstream face. In this scenario, even a period of some weeks may bring about a 'rapid' change in the pore water pressure distribution. [WW]

R645-301-731, The springs proposed for operational and reclamation monitoring are not sufficient by Division standards. The Division will require SP-4, SP-6, SP-8, SP-14, SP-20 and SP-33 be monitored for discharge and water quality during operational and reclamation activities. Springs SP-14, SP-16, SP-19, SP-22 and SP-24 should be monitored for discharge and field parameters, as recommended by the applicant. [DD]

R645-301-731.300, The plan suggests in Section 358.530 that there may be ponds containing hazardous concentrations of acid/toxic forming materials. Please provide a reference to the Sections in the application where further description of the characteristics of the expected hazard can be found. I.e. Does the applicant expect run off from the Tropic Shale to form saline/sodic ponded water? Also, please provide a reference to the Section of the application that describes the plans for identification, storage and burial of the hazard. • Appendix 6-2 unacceptable levels of selenium in the zone below the coal and in the vicinity of CH-06-05, below 35 ft. where either insufficient sample provides no information on selenium levels or high levels of selenium were recorded. Please explain how overburden below 35 ft represented by CH-06 cores analyses and the zone below the coal will be isolated from groundwater during final reclamation. [PB]

R645-301-731.800, The applicant must provide reclamation designs for the eastern permit boundary where the mining pits meet the undisturbed alluvium. Such designs will specify engineering methods to be used to minimize drainage from the alluvium into the fill in the reclaimed pits, thereby protecting the hydrologic balance in Sink Valley. The applicant should discuss how the pit will be reclaimed to restore the groundwater level in Sink Valley. [JS, DD] • Section 727

and Section 728.340 water rights replacement plans must be further addressed, with regard to the total volume of water available from well Y-61 for this use. [PB]

R645-301-742.312.1, -553.110, - 742.313, - 742.314, The Division sees no purpose or need for the unnatural and potentially unstable proposed final permanent configuration of Lower Robinson Creek, which furthermore does not meet AOC requirements. The applicant must provide a plan to reclaim Lower Robinson Creek to a more natural and stable configuration, which restores or approximates the premining characteristics of the original stream channel and AOC for the area. Increasing sinuosity above that of the current channel in order to reduce the channel gradient might be considered. [JS]

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The Applicant did not meet the requirements of this section by providing a description, plans and drawings for the support facilities. The Applicant listed the support facilities in Section 526.220 of the PAP.

The Applicant should review the surface facilities plan and make sure that all facilities such as fences, gates, water lines, power lines and sewage lines have been included. The Applicant might need to include other items such as fences, gates, power lines, water lines, sewage lines and other items that might needed to be constructed.

Many comments were received concerning dust control and the implications for visibility in the area. The Applicant must give a detailed description of the specific dust control structures that will be installed. The information is required by R645-301-423 for surface mines exceeding 1 MT production and the Division needs that information to ensure fugitive dust is controlled.

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-526.222 and R645-301-423, The Applicant must give a detailed description of the specific dust control structures that will be installed to ensure fugitive dust is controlled. [WW, PB]

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The Applicant meet the requirements of this section. The Applicant's commitments to place signs and makers are listed in Section 521.200 through Section 521.270 of the PAP.

Findings:

The information provided in the application is considered adequate to meet the requirements of this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

General Requirements

The Applicant does not anticipate the need for blasting. Section 523 states that blasting may be implemented after clearing vegetation. Section 524 suggests that a "cursory analysis" indicates blasting may not be necessary for this mining operation due to the soft clay and shale overburden and due to the mining of the coal from on top of the seam to avoid a wet clay layer below. However, submittal of a blasting plan is required with the permit application in accordance with R645-301-524.

In order to respond to concerns raised by commenters, the Division will require more supporting information, such that the Division might provide approval of the plan without blasting, under R645-301-524.220. ie. seismic testing of rock, hardness of coal, etc.
An exemption to the requirement for providing a blasting plan as part of the initial mining and reclamation plan may be considered as indicated by R645-301-524.220.

Preblasting Survey

The Applicant did not meet the requirements of this section. The Applicant states that when five pounds of explosives or blasting agents are used they will conduct a pre-blast survey, see Section 524.300 – 350 of the PAP.

R645-301-524.300 states, " The pre-blasting survey must be described in the permit application. For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES pre-blasting surveys are required for blasts that use more than five pounds of blasting agent or explosives. The requirements are:" The five pound exclusion does not apply for surface mines and must be addressed.

General Performance Standards

The Applicant addressed the general performance standards in Section 524 of the PAP.

Blasting Signs, Warnings, And Access Control

The Applicant address those requirements in Section 525.500 – 532 of the PAP.

Control of Adverse Effects

The Applicant address those requirements in Section 524.600 – 610 of the PAP.

Records of Blasting Operations

The Applicant address those requirements in Section 524.700 of the PAP.

Findings:

The information provided in the application is not considered adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-524.300, The Applicant must remove from Section 524.300 – 350 of the PAP the comments about supplying the Division with a blasting plan if five pounds or more of explosives or blasting agent is used. The exclusion applies only to underground mines. The Applicant must supply the Division with a pre-blast survey for any blasting, as part of their blasting plan. [WW]

R645-301-523, R645-301-524, R645-301-524.200 and R645-301-121.200, Section 523 states that blasting may be implemented after clearing vegetation. Section 524 suggests that a "cursory analysis" indicates blasting may not be necessary for this mining operation due to the soft clay and shale overburden and due to the mining of the coal from on top of the seam to avoid a wet clay layer below. However, submittal of a blasting plan is required with the permit application in accordance with R645-301-524. Please provide a blasting plan or alternatively, provide more

supporting information, such that the Division might provide approval of the plan without blasting, under R645-301-524.220. ie. seismic testing of rock, hardness of coal, etc. [PB, WW]

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

The Applicant did not meet the requirements of this section of the regulations. Map 1-2, Project Area LBA shows the project area and the proposed expansion for the federal leases. Map 5-10, Coal Removal Sequence, does not show the anticipated dates for when coal would be mined in the expansion areas. The Division needs that information to do analysis that involves expansion of the permit areas.

Mining Facilities Maps

The Applicant did not meet the requirements of this section. The Applicant must label coal stockpile, conveyors and coal load out faculties on Drawing 5-3, R645-301-521.170.

Mine Workings Maps

The Applicant met the requirements of this section. There are no mines in or near of the permit area.

Certification Requirements

The Applicant met the requirements of this section. A registered professional engineer certified all appropriate maps.

Findings:

The information provided is not adequate to meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-521.141, The Applicant must show on Map 5-10 or a similar map the anticipated dates for mining coal from the expansion areas. The Division requests the anticipated dates for acquiring additional subareas, because the preferred reclamation plan is based on additions to the permit area. [WW]

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The reclamation plan described in Section 542 is contemporaneous with the operation plan described in Section 528. Overburden removal is shown on Dwg 5-16. Operational sequence and contemporaneous reclamation sequence is shown on Dwg 5-17 through 5-19. The reclamation sequence is shown on Dwg. 5-38. Mining pits will be reclaimed within 180 days of coal removal or 1,500 ft. of active coal face. An excess spoil pile will cover 87 acres at final reclamation and rise 100 ft above the original contour. All reclaimed slopes will be 3h:1v. The surface four feet of all reclaimed surfaces will be replaced topsoil and subsoil. The post mining land use is grazing land or pastureland.

The reclamation techniques and protection measures are described in Chapter 3, Sections 340 through 358.530, pages 44 through 74.

Findings:

Specific findings for reclamation are addressed by discipline below.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The post mining land use for the areas to be mined is described in Volume 2, Chapter 4, and Pages 4-6 through 4-9. Assuming the Applicant implements the reclamation plan as described in the MRP the post mining land use should be achieved. There are two landowners of the permit area, Richard Dame and Burton Pugh. The applicant consulted with them regarding

their interests in the final outcome of the reclamation efforts. Management plans for each landowner are described on Pages 4-7 and 4-8 of Chapter 4.

The Management Plan for the Richard Dame Property, the current land use of Mr. Dame's property is forage for domestic livestock and some wildlife species. The land includes irrigated pasture for cattle and some horses, native stands of pinyon juniper and sage brush communities as noted on map 3-1, Vegetation. Mr. Dame has expressed an interest to return his property to pasture land that focuses on domestic livestock and includes some plant species for wildlife habitat. Table 3-19 includes the seed mix, native and introduced grasses and forbs, to be planted to meet the landowner's request. A copy of the signed management plan is included in appendices 4-3 and 4-4.

The Management Plan for the Burton Pugh Property, the land owned by Mr. Pugh in the permit area provides forage for livestock and some wildlife species as well. The land includes non irrigated pasture land, meadows, sagebrush/grass, pinyon juniper and oak brush communities as noted on map 3-1. The livestock on the property are mostly cattle and sometimes horses. Mr. Pugh has expressed an interest in restoring his land to its original use or better condition for livestock and wildlife habitat. In order to accomplish this pasture lands will be reclaimed with the focus on domestic livestock. The seed mix will include plant species used by wildlife species in addition to native and introduced grasses. A portion of the property will be reclaimed to sage –grouse habitat as well as mined areas that were interspersed with pinyon juniper. A copy of the signed management plan is included in appendices 4-3 and 4-4.

Reclamation of the County Road, the application needs to include documentation from the County and the landowners that addresses the reclamation of the county road in the permit area after mining has been completed.

Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with

R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275, If the county road is not reconstructed within the permit area, the application needs to include documentation from the County and the landowners that addresses the reclamation of the county road in the permit area after mining has been completed. [WW, PB]

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The application includes measures to be taken to protect fish wildlife and related environmental values during reclamation operations in chapter 3, Sections 358 through 358.530, pages 72 through 74 including :

- Threatened and Endangered Species,
- Eagles,
- Removal of a Threatened &Endangered Species,
- Riparian and Wetland Areas,
- Powerline and Transmission Facilities,
- Fences and Conveyers and,
- Toxic-Forming Areas.

This section states that "The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials." In the event other appropriate methods are deemed necessary, the application needs to include a commitment to consult with DOGM, biologists from the DWR and other appropriate entities to determine the scope of other appropriate methods to exclude wildlife.

Chapter 5, Section 521.125, page 5-8 states that "The MRP does not contemplate construction of any permanent water impoundments; coal processing waste banks and coal processing waste dams or embankments. With that in mind, it appears as though the previous statement, "The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials", is referring to the sediment ponds. The application needs to describe which ponds may contain hazardous or toxic forming materials and what those materials are, see deficiency written under R645-301-731.300.

Findings:

The information in the application is not adequate does not meet the requirements of this section of the regulations. In addition to the R645-301-731.300 deficiency written on ponding of hazardous materials, prior to approval the following information must be provided in accordance with:

R645-301-333, Section, 358.530, page 3-74, states that "The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds

which contain hazardous concentrations of toxic forming materials". In the event other appropriate methods are deemed necessary the application needs to include a commitment to consult with DOGM, biologists from the DWR and other appropriate entities to determine the scope of other appropriate methods to exclude wildlife. [JH]

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The Applicant did not meet the requirements of this section. The Applicant states that due to the swell factor excess spoil would be generated and mentions a request for a variance from the approximate original contour requirements in various sections of the PAP including, Section 512.260, Section 553.200, and Section 553.120.

The Applicant did not explain what the variance would entail or why the Division should grant the variance. The Division acknowledges that due to the swell factor the pre-mining and postmining topographies will be different, but approximate original contour (AOC) does not mean that the pre-mining and postmining topographies are the same.

The definitions of AOC are couched in terms of backfilling and grading in order to achieve certain results. The mining and reclamation plan must provide the basis for determining whether the proposed backfilling and grading plan will

- Minimize off-site effects.
- Achieve a final surface configuration that closely resembles the general surface configuration of the land prior to mining. The main concerns are slope length and grade, and whether the drainage patterns tie into the surrounding drainages.
- Provide a subsurface foundation for a vegetative cover capable of stabilizing the surface from erosion.
- Support the approved postmining land use.

The request for variance from Approximate Original Contour must describe whether the restoration of original drainage patterns can be achieved ((R645-301-762.100) or whether the criteria of R645-301-553.800 apply to this surface mine. Excess spoil should be graded to attain the lowest practical grade (R645-301-553.800) and provide a natural appearance to the contours of the spoil pile which would include irregular slopes and irregular surface such that the reclaimed site is compatible with the natural surroundings (R645-301-412.300) and landscape character as seen from within the Alton amphitheater and from the Paunsaugunt Plateau.

See also the hydrology resource information deficiency previously written under R645-301-742.312.1, -553.110, - 742.313, - 742.314 concerning the unnatural and potentially unstable proposed final permanent configuration of Lower Robinson Creek which does not meet AOC requirements.

Findings:

The information provided in the permit application does not meet the requirements of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-553.110 and R645-301-553.800, The request for variance from Approximate Original Contour must describe whether the restoration of original drainage patterns can be achieved ((R645-301-762.100) or whether the criteria of R645-301-553.800 apply to this surface mine. Excess spoil should be graded to attain the lowest practical grade (R645-301-553.800) and provide a natural appearance to the contours of the spoil pile which would include irregular slopes and irregular surface such that the reclaimed site is compatible with the natural surroundings (R645-301-412.300) and landscape character as seen from within the Alton amphitheater and from the Paunsaugunt Plateau. [PB, WW]

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

The Applicant did not meet the general backfilling requirements which are:

- Achieve the approximate original contour. The Division considers that the erosion and water pollution will be minimized and that the site will be compatible with the postmining land use if the hydrology, vegetation and land use requirements have been met. [This requirement is met if the AOC requirements have been met, see deficiency written under R645-301-553.110 and R645-301-553.800 and also see the hydrology resource information deficiency previously written under R645-301-742.312.1, -553.110, - 742.313, - 742.314 concerning the unnatural and potentially unstable proposed final permanent configuration of Lower Robinson Creek which does not meet AOC requirements.]

- Eliminate all highwalls: The Applicant states in Section 553.120 of the PAP, that all highwalls will be eliminated. Drawing 5-35, Post Mining Topography – Preferred Scenario and Drawing 3-37, Post Mining Topography – Alternative Scenario, both show that all highwalls will be eliminated at final reclamation.
- Eliminate all spoil piles: The Applicant stated in Section 553.120, Section 553.200 and Section 553.210 of the PAP that all spoil will be properly handled. Drawing 5-35, Post Mining Topography – Preferred Scenario and Drawing 3-37, Post Mining Topography – Alternative Scenario, both show a reclaimed spoil pile.
- Eliminate all depressions: The Applicant states in Section 542-100 through 600 that all depressions would be removed except small depression used to retain moister, minimize erosion, create and enhance wildlife habitat or assist vegetation.
- Achieve a postmining slope that does not exceed either the angle of repose of such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use. In Section 553.130 of the PAP, the Applicant states that the postmining slopes will not exceed the angle of repose and that the slopes will have a long term static safety factor of at least 1.3. The Applicant includes safety factor calculations for the excess spoil areas, but did not mention the safety factors in other areas. One way to address the issue is to identify the slopes that would have the lowest safety factors (longest slope and steepest slope) and show that they meet the minimum safety factor requirements. In addition, the Applicant must also state why the reclaimed slope angles are less than the angle of repose.

In addition, the Applicant has requested a variance from the 180-day or 1,500 linear feet backfilling requirement. In Section 528.200 of the PAP, the Applicant states that in Stage 3:

> *At the end of mining, an area will not be completely backfilled that is approximately 2,000 feet in length and 1,300 feet wide and will require....Some delay is unavoidable in reclamation of the initial mining areas due to the time required to establish the initial working pit and backfill area....*

In Section 542-100 through 600 of the PAP, the Applicant states:

> *Generally, mined areas will be backfilled and graded with approximately 180 days following coal removal, or 1,500 feet of the active coal removal face. One exception to the standard is during mining and backfilling of the final pits in the south end of the permit area. During this phase of mining, backfilling will follow approximately 2,000 feet from the active coalface.*

The main reason for the exception is the Applicant's need to keep roads open. The 2,000 ft. X 1,300 ft. area is equivalent to 69 acres. The Division is willing to work the Applicant so that they can keep the road open during the final stages of mining. However, 69 acres is

excessive and the Applicant should show that some backfilling and grading could take place in the pit during the final stages of mining.

In Section 553 of the PAP, the Applicant states in the section of the alternative reclamation scenario (federal lease not acquired at the end of the operation), "In this scenario, reclamation of the project area will be significantly delayed...."

The Division cannot grant the Applicant's request of a significant delay because the request is too general. The Division would need a specific timeframe for the completion of backfilling and grading in the final pit and specific reasons why no other alternative is feasible.

The Division cannot allow the term "approximately" to define the amount of time between coal removal and rough backfilling and grading. The Applicant must remove the word "approximately."

The Applicant must also state a time frame within which rough backfilling and grading will be accomplished in the southern pit.

Previously Mined Areas

There are no previously mined areas within the permit boundaries.

Backfilling and Grading On Steep Slopes

There are not steep slopes within the permit area.

Special Provisions for Steep Slope Mining

There are no special provisions for steep slope mining.

Findings:

The information provided in the permit application does not meet the requirement of this section. Prior to approval, the Applicant must provide the following in accordance with:

R645-301-553 and 542.200, The Applicant has requested a variance from the 180 day requirement for contemporaneous backfilling and grading of the southern pit (69 acres in Phase 3), based upon the continued use of the area as a haul road. While reclaiming the road may not be practical, reclaiming areas away from the road might be feasible. The application should describe a time table for the requested variance and limit the acreage of variance to that needed for the road. [WW]

R645-301-553.130, The Applicant must show that all reclaimed slopes (including those not associated with the excess spoil area) have a safety factor of 1.3 or greater and that the slope angles are less than the angle or repose. The Applicant includes safety factor calculations for the excess spoil areas but did not mention the safety factors in other areas. One way to address the issue is to identify the slopes that would have the lowest safety factors (longest slope and steepest slope) and show that they meet the minimum safety factor requirements. In addition, the Applicant must also state why the reclaimed slope angles are less than the angle of repose. [WW]

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The Applicant has not met the requirements of this section. The following commitments are made in Sections 513.200, 529, 541, 542.700, and 755. These plans and commitments meet the requirements of the Coal Mining Rules for Mine Openings, including exploration bore holes, water wells, and monitoring wells:

- Wells constructed for monitoring ground water conditions in the proposed Coal Hollow Mine permit and adjacent area, including exploration holes and boreholes used for water wells or monitoring wells, will be designed to prevent contamination of ground- and surface-water resources and to protect the hydrologic balance.
- All wells will be managed to comply with R645-301-748 and R645-301-765. Water monitoring wells will be managed on a temporary basis according to R645-301-738.
- If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731.
- Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

- A diagram depicting typical monitoring well construction methods is shown in Figure 7-11. A steel surface protector with a locking cover will be installed at monitoring wells to prevent access by unauthorized personnel. Where there is potential for damage to monitoring wells, they will be protected through the use of barricades, fences, or other protective devices. These protective devices will be periodically inspected and maintained in good operating conditions. Monitoring wells will be locked in a closed position between uses.

- When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.
- Any water well exposed by coal mining and reclamation operations will be permanently closed unless otherwise managed in a manner approved by the Division.
- Wells constructed for monitoring ground-water conditions in the proposed Coal Hollow Mine permit and adjacent area, including exploration holes and boreholes used for water wells or monitoring wells, will be designed to prevent contamination of ground water and surface-water resources and to protect the hydrologic balance. A diagram depicting typical monitoring well construction methods is shown in Figure 7-11.

Section 513.200 outlines the procedure that will be used for abandonment and closure of wells. The plans are clear for the method to close wells deeper than 30 feet, but unclear on closure of shallower wells. The application needs a closure plan that includes all wells and bore holes.

Although there are currently no plans for underground mining, the Applicant commits in Section 513.500 to cap, seal, backfill or otherwise properly manage each shaft, drift, adit, tunnel, exploration hole, entryway, other exposed underground opening, or other opening to the surface from the underground consistent with MSHA 30 CFR 75.1711. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

Findings:

The information provided in the permit application does not meet the requirement of this section. Prior to approval, provide the following in accordance with:

R645-301-748, -755, -765, The plans are clear for the method to close wells deeper than 30 feet, but unclear on closure of shallower wells. The application needs a closure plan that clearly includes all wells and boreholes. [JS]

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Reclamation slopes will not exceed 3h:1v (Sec. 242.130(c). Prior to topsoil placement, slopes will be smoothed (Sec. 242.110) and treated if necessary to reduce slippage of redistributed topsoil and subsoil (Sec. 242.200). Rubber tired equipment will be minimized on regarded slopes (Sec. 242.120). Dozers and scrapers will be used to replace the topsoil and subsoil to a depth of four feet that will be comprised of 6 – 12 inches of topsoil and the remainder subsoil (Sec. 5 App. 2-1 and Sec. 240). Soil replacement thickness will be checked using a GPS system (Sec. 242.110). After soil placement, soils will be sampled for fertility and salinity with 1 sample taken per four acres (Sec. 243). Areas of compaction due to heavy equipment will be ripped, disked, and harrowed prior to seeding. Areas that are not compacted will be roughened slightly with dozer tracks prior to seeding. Soil amendments will be applied over the seed bed surface Seeding will occur immediately after tracking and mainly in the spring or fall. (Sec. 242.120 (b).

The Applicant has made several commitments to test subsoil materials during removal to ensure that the reclaimed surface provides a suitable rooting medium to a depth of four feet. The following commitments are appropriate, but in each case, the commitment should include the rate of sampling, i.e. number of samples to be taken by ton or by cubic yardage moved.

> "All substitute subsoil will be tested for pH, conductivity, SAR, percent lime and texture, prior to salvage and stockpiling." Sec. 232.500

> "ACD will monitor pH, conductivity, texture and percent lime in the field during mining operations to ensure that only materials with good or fair suitability are placed in the upper 4 feet f the reclamation soil profile..." Sec. 5, pg. 5-3, App. 2-1

> "If additional materials are needed, the Alton Coal Development will salvage suitable overburden for use as a substitute subsoil material from the zone below...to a depth of 30 feet, excluding any Tropic shale materials. ACD will do additional sampling to identify the zones in which suitable materials occur for maximum salvage potential of substitute subsoil. Representative overburden samples wil be analyzed for pH, conductivity, SAR, percent lime, and texture." Sec. 232.720

The Applicant has stated that 90% of the subsoil used to construct the four foot cover depth will be of good to fair quality with respect to pH and lime characteristics. The applicant further states, "No subsoil or overburden with unacceptable characteristics will be placed within 48 inches of the reclamation surface." Sec. 5 pg. 5-2 App. 2-1. It is understood that the unacceptable characteristics are defined in the DOGM Guidelines for Topsoil and Overburden Handling, as reproduced in Table 4-1, Sec. 4, App. 2-1.

Findings:

The information provided in the application does not meet the requirements of the R645 Coal Rules for Soils Redistribution Plan. Prior to approval, please provide the following, in accordance with:

R645-301-232.500, Commitments made concerning topsoil and subsoil sampling in Sec. 232.500; Sec. 5, pg. 5-3, App. 2-1; and Sec. 232.720 are appropriate, but in each case, the commitment should include the rate of sampling, i.e. number of samples to be taken by ton or by cubic yardage moved. • Overburden monitoring described in Sec. 5, pg. 5-3, App. 2-1 should include SAR analysis. [PB]

R645-301-242.200, Section 242.110 should indicate that the slopes will be roughly graded, rather than a smooth surface, prior to subsoil and topsoil application. [PB]

R645-301-244.100, The application must describe the use of surface roughening, wood fiber mulch and tackifier on all stockpiles (spoil, topsoil and subsoil piles) •Section 242.120 (b) must describe seeding, and an application of wood fiber mulch and tackifier immediately following topsoil application, regardless of season. • Section 244.200 must describe the mulch application by type of mulch, application method, and application rate for each post mining land use. [PB]

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Reclamation

The Applicant did not meet the requirements of this section. The Applicant must state who will reclaim the segments of Kane County Road 136 that are in the permit area.

In Section 542-100 through 600, the Applicant committed to reclaim all roads as to the requirements of R645-301-542.600.

Retention

The Applicant did not meet requirements of this section. The Applicant made a general statement that roads not to be retained for a post-mining land use will be reclaimed. General statements like that do not communicate intentions very well. The Applicant must remove the general statement and state specifically what roads will be retained.

Findings:

The information provided in the permit application does not meet the requirement of this section. Before approval, the Applicant must provide the following in accordance with:

R645-301-542.600, Maps and narrative in the application must describe reconstruction of County Road 136 to its original alignment as requested by the County. In addition, Applicant must state who will reconstruct those sections of Kane County Road 136 that will be closed to the public, along with a timetable for reclamation
• The Applicant must specifically state which roads will be retained along with the supporting documentation. The Division cannot accept blanket statements about how roads not needed for the postmining land use will be left. [WW]

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The application commits that all impoundments will be reclaimed at the end of operations, and that all sedimentation control structures, including ditches, berms, and sedimentation ponds not retained as part of the approved post-mining land use will be removed, the areas regraded, topsoiled, and revegetated (524.100-600). Drawing 5-38 shows the estimated timeline for removal of these structures. Expected removal is during year four of the mining and reclamation process. In areas where soils are not stabilized following the removal of these sediment impoundments, silt fence will be appropriately installed and maintained to provide sediment control until stable conditions are met (Section 763.100).

When no longer needed for monitoring or other use approved by the Division (unless approved for transfer as a water well) each well will be capped, sealed, backfilled, or otherwise properly managed. Permanent closure measures outlined in Sections 542.700 and 551 are designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters. Water wells exposed by coal mining and reclamation operations will be permanently closed, unless otherwise managed in a manner approved by the Division. Exploration holes and

boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance (542.700).

The applicant realizes that there is a good potential of intercepting groundwater as mining moves east, but does not anticipate encountering a large volume of water. The applicant has discussed mitigation plans in the form of a grout curtain to stem the flow of groundwater to the pit. The applicant states in Section 724.500, if substantial groundwater flows into the mining areas as mining progresses towards alluvial springs and seeps in the eastern part of the permit area (Sink Valley), the conditions will be evaluated at the time they occur.

It appears to the Division that there is a good potential for the mine to intercept groundwater at a high rate as the mine develops east and as the walls of the mine pit are cut into the Sink Valley containment structure, (see Figure 8 A-A', Petersen Hydrologic report, June 12, 2007 and Petersen Hydrologic Report, Figure 6a, January 15, 2008). The applicant discusses using Well Y-61 as an alternate water source to replace water resources impacted from mining, however the aquifer that supplies that well is the same aquifer that may be impacted from mining.

Findings:

The information provided does not meet the requirements for hydrologic reclamation and mititgation described in the Coal Rules. Prior to approval, provide the following in accordance with:

R645-301-745.120, The Application must provide details on reclamation treatments to prevent water infiltration into the fill [DD]

R645-301-750, -121.200, The applicant needs to clarify and provide design and performance specifications as to how ground water encountered in alluvial sediments along the margins of mine pit areas will be drained in advance of mining and during mining through the use of wells, pumps, pipes, ditches or other conveyance methods that will carry these waters away from the mining area. [JS]

(See also the deficiencies previously written under R645-301-731.800 in the hydrology operations section and "R645-301-742.312.1, -553.110, - 742.313, - 742.314," in the hydrology resource information section, concerning the unnatural and potentially unstable proposed final permanent configuration of Lower Robinson Creek which does not meet AOC requirements.)

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

Rough backfilling and grading is required for surface mining under R645-301-553. Operational sequence and contemporaneous reclamation sequence is shown on Dwg 5-17 through 5-19. The application describes contemporaneous reclamation of the pits in Section 341.100, and Section 528.200 and Section 542.

Section 341.100 on page 3-44 states that "A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP". Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan.

The applicant requests a variance from reclamation in the 180 day period for the 8th pit as described in Section 542. Further discussion and a deficiency is written on this issue under R645-301-553, Backfilling and Grading.

Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Further discussion and a deficiency is written on a variance from backfilling and grading requirements under R645-301-553, Backfilling and Grading. Prior to approval the following information must also be provided in accordance with:

R645-301-352, -301-553, Section 341.100 on page 3-44 states that "A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP." Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan. [JH/

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: General Requirements

The revegetation portion of the reclamation plan for the Coal Hollow surface mine is included in Chapter 3, Sections 341 through 358.530, pages 44 through 74.

Revegetation: Timing

Chapter 5 of the application includes a detailed description of the completion of each major step in the mining process. Accordingly no more than 40 acres will be disturbed at any given time. Section 341.100 on page 3-44 states that "A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP". Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. As noted in the section under Contemporaneous Reclamation, Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan.

Revegetation: Mulching and Other Soil Stabilizing Practices

Mulching techniques are described in Section 341.230, page 3-53 of the application. According to this information mulch will not be applied to the reclaimed pasture land. Granted this area is relatively flat and one of the primary uses of mulch is to control erosion. However there are additional beneficial uses for mulch. According to the United States Department of Agriculture research paper, Reclamation on Utah's Emery and Alton coal fields: Techniques and Plant Materials, INT-335, June 1985, page 24, "At the end of the first growing season, frequency of grass plants averaged 92 percent on the ripped area where hay had been rotovated into the soil surface compared to 52 percent on ripped areas receiving no hay amendment. Accordingly it seems reasonable for the applicant to consult with the division's soils and biology staff regarding mulch or soil amendments for the pasture land areas. The applicant also needs to explain how water will initially get to the reclaimed pasture areas as there are no commitments in the plan to irrigate these reclaimed areas.

Revegetation: Standards For Success

Standards for success are described in Section 356, pages 3-62 through 3-65 of the application. They will follow the requirements of R645-301-353 and "Appendix A, Vegetation Information Guidelines". Criteria for determining success include: Cover, Shrub Density, Frequency, Production and Diversity.

Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with:

R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275, Section 341.230, page 3-53 of the application states that mulch will not be applied to the reclaimed pasture land. The applicant needs to provide a rationale for not using the mulch in this area. • Table 7 identifies the characteristics of the meadow and dry meadow plant communities as being conducive to sub-irrigation. Section 6.4 states that "the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques". The application will need to include a mitigation plan for restoring water to these areas and might consider including the post mining land use of a "developed water resource." [JH]

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Stockpiled topsoil and subsoil will be bermed and seeded. These stockpiles cover 17.53 acres (Dwg. 2-2).

Areas adjacent to primary roads will be stabilized and vegetated (Sec. 526.400).

Haul roads will be watered or be treated with dust suppressants and a 15 mph speed limit will be imposed (Sec. 526.400 and App. 4-2).

Slopes of the contemporaneous reclaimed acreage will be less than 3h:1v and will be seeded and mulched after topsoil placement. Lands reclaimed to pasture will not be mulched, however (Sec. 244.200). Grass matting may also be used (Sec. 242.130 (c) and a variety of techniques and materials may be used depending on the reclaimed area (Sec. 244.200).

Stabilization of the overburden/excess spoil stockpile created from mining Pits 1 –8 and as mining progresses from Pits 9 – 15 is described in Sec. 528.200. The regarding of the excess spoil to a 3h:1h slope is described in Sec. 528.310. The replacement of the topsoil and subsoil on the excess spoil is described in Sec. 528.310 on page 5-39. The timetable for reclamation provided in Section 542 is specific about the mined out area, but not the spoil pile. The application should specify that seeding and mulching of the excess spoil pile will be contemporaneous with the staged approach to building the pile. i.e., First the 2.7 million cubic

yards from Pits 1 – 8 will be seeded and mulched immediately after regarding and the additional 2,500 feet extension of the excess spoil pile from Pits 9 – 15 will be reclaimed contemporaneously as well.

Treatment of rills and gullies is described in Section 244.200. The commitment provided in Section 244.320 (b) does not meet the requirements of the Coal Rules. The commitment must include replacement of topsoil and reseeding or replanting.

Findings:

The information provided in the application does not meet the requirements of the R645 Coal Rules for Soil Stabilization. Prior to approval, please provide the following, in accordance with:

R645-301-244.200, Section 242.120(b) of the application states that the topsoil surface will be disced prior to seeding in most instances, but that compacted areas will be treated with ripping. How will the compaction be measured and determined? [PB]

R645-301-234.230, The replacement of the topsoil and subsoil on the excess spoil is described in Sec. 528.310 on page 5-39. The timetable for reclamation provided in Section 542 is specific about the mined out area, but not the spoil pile. The application should specify that seeding and mulching of the excess spoil pile will be contemporaneous with the staged approach to building the pile.[PB]

R645-301-244.320, The commitment to repair rills and gullies provided in Section 244.320 (b) must include replacement of topsoil and reseeding or replanting. [PB]

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

The Applicant met the requirements. In Section 515.300 of the PAP, the Applicant commits to follow the notification procedures and otherwise secure the site.

Findings:

Information provided in the application Section 515 mimics the Coal Rules and therefore meets the requirements for Emergency and Temporary Cessation Reporting

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Affected area boundary maps for vegetation and fish and wildlife information were not found.

The Applicant did not meet the requirements of this section of the regulations. Map 1-2, Project Area LBA shows the project area and the proposed expansion for the federal leases. Map 5-10, Coal Removal Sequence, does not show the anticipated dates for when coal would be mined in the expansion areas. The Division needs that information to do analysis that involves expansion of the permit areas. The Division needs to the schedule for acquiring additional areas because the preferred reclamation scenario is based on the Applicant's ability to get additional areas.

Bonded Area Map

The Applicant did not meet the requirements of this section. The Applicant shows on Drawing 5-3 that access to the mine will be from a road branching off from a closed portion of County Road 136. That access road must be included within the permit area. In addition, the Applicant must also include within the permit area any portion of the County Road for which they control access.

Reclamation Backfilling And Grading Maps

The Applicant did not meet the requirements for this section. The Applicant did not include cross sections for the alternative backfilling and grading plan.

The Applicant provided two reclamation maps based on whether or not they can obtain additional lease. Drawing 5-35 shows the contours of the preferred reclamation scenario and Drawing 5-36 shows the cross sections. Drawing 5-37 shows the contours of the alternative reclamation scenario.

Reclamation Facilities Maps

The Applicant did not meet the requirements of this section. Blanket statements leaving structures that are needed for the post-mining land use are not acceptable. The Applicant must

either cite what specific facilities will remain after final reclamation (and show the facilities on a map) or the Applicant state that all facilities will be removed at final reclamation.

Final Surface Configuration Maps

See the reclamation backfilling and grading maps section.

Reclamation Monitoring And Sampling Location Maps

Vegetation monitoring and sampling locations map was not found.

The application states that ground- and surface-water monitoring will continue through the post-mining periods until bond release. The monitoring requirements, including monitoring sites, analytical parameters and the sampling frequency may be modified in the future in consultation with the Division if the data demonstrate that such a modification is warranted (Section 731.200).

Reclamation Surface And Subsurface Manmade Features Maps

Reclamation Treatments Maps

No found.

Certification Requirements.

The Applicant met the requirements of this section. The Applicant had all pertinent maps and cross-sections certified by a registered professional engineer.

Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with:

R645-301-323, The application needs to include Reclamation Monitoring And Sampling Location Maps and Reclamation Treatments Maps. [JH]

R645-301-542.200, The Applicant must include cross sections that show how the site will be reclaimed in the event that the federal leases are not acquired. [WW]

R645-301-542.320, The Applicant must either list in the PAP or show on a reclamation map those facilities that will remain after final reclamation or state specifically in the PAP that all facilities will be removed at final reclamation. [WW]

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

General

The Applicant met the requirements of this section. The Division will process the permit application without requiring the Applicant to acquire a bond. However, the Division cannot issue a permit until the bond is posted.

Form of Bond

The Applicant met the requirements of this section. The Division will process the permit application without requiring the Applicant to acquire a bond. However, the Division cannot issue a permit until the bond is posted.

Determination of Bond Amount

The Applicant met the requirements of this section. The Division will determine the bond amount after receipt of requested information in the operation and reclamation plan.

Terms and Conditions for Liability Insurance

The Applicant met the requirements of this section, although the liability insurance form found in Appendix 1-4 expired on 5/19/2008 and must be renewed. Alternatively, self-insurance may be pursued, as per R645-301-117.100. The Applicant needs to provide either a certificate of liability insurance or evidence of self-insurance in compliance with R645-301-800.

Findings:

The information provided in the permit application is considered adequate to meet the requirement of this section at this point in the permitting process. The Division will determine the bond amount after receipt of requested information describing the operation and reclamation plan. In addition, prior to approval, the application must provide the following, in accordance with:

R645-301-117.100 The Applicant needs to provide continued coverage for liability insurance or evidence of self-insurance in compliance with R645-301-800.[JS]

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

INTRODUCTION

Regulatory Reference: 30 CFR Sec. 785; R645-302, et seq.

Analysis:

There is a possibility of an Alluvial Valley Floor (AVF) being present. The Division is currently analyzing this and has asked for additional information.

Findings:

A determination of an AVF is still pending.

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

See the above discussion of Alluvial Valley Floors in the Environmental Resource Information section.

Findings:

A determination of an AVF is still pending.

SPECIAL CATEGORIES

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Division will provide a CHIA.

Findings:

The Division will provide a CHIA.